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California State Medical Society, 1888.

The Report on Medicine.

THE PROGRESS OF MEDICINE

MEASURED BY

THE PROGRESS OF THERAPEUTICS.

BY

SAM'L O. LEWIS POTTER, A. M., M. D.,

OF SAN FRANCISCO

CHAIRMAN OF THE COMMITTEE ON PRACTICAL MEDICINE AND MEDICAL LITERATURE,  
PROFESSOR OF THEORY AND PRACTICE OF MEDICINE, IN THE  
UNIVERSITY MEDICAL COLLEGE OF SAN FRANCISCO

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**California State Medical Society, 1888.**

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## NOTE

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WHEN writing the following paper the author put his therapeutical glasses on, so to speak; and looking through them over the broad expanse of Medicine, he endeavored to describe whatever seemed to merit the attention of his readers, for hearers he could hardly expect. At the same time, he has aimed at presenting a most vital question for the thoughtful consideration of his brethren, in the hope that thereby he may aid, if ever so little, the progress of Scientific Therapeutics. In so doing, he has refrained from obtruding any views as his own, preferring to present those of better known men, whose words would carry more weight than his. Such an extensive programme required a somewhat extended presentation; and the paper, as herewith submitted in its entirety, is somewhat longer than the average of those in the *California Transactions*. Such a subject as that herein presented had better remain untouched than to be used as a feather wherewith to tickle the ears of an audience during the orthodox twenty minutes. Captious critics may point to the Sermon on the Mount and that on Mars' Hill, as samples of short, yet good preaching; but in so doing they forget who they were who delivered those discourses. If the so-called "living issues" of politics may always claim at least an hour to every speech, the issues which physicians present to each other should have vitality enough to demand an equal period of time from those whose lives are devoted thereto. But to reinvigorate an issue long since dead,—"Hoc opus, hic labor est!"—which can never be accomplished by means of twenty-minute papers from even the most eminent in our ranks.

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## THE PROGRESS OF MEDICINE

MEASURED BY

## THE PROGRESS OF THERAPEUTICS

DURING THE YEAR 1887

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The past year has been a busy one in all departments of science, and a fruitful one in many. The mental activity, apparent to the most casual observer who looks around him upon the world of to-day, evinces that upheaval of thought, which is the leading characteristic of the age we live in. No longer do men cling, with the tenacity of drowning wretches, to the planks and spars everywhere around them,—the ancient traditions and maxims,—but each one tries to strike out for himself, and many perish in the effort. A restlessness is manifest in every field of thought and work,—in striking contrast to the contentment of a few generations back. The ancient doctrines are being subjected to fresh and close examination,—nothing is accepted on authority,—but every observation and experiment, announced to the scientific world, is eagerly repeated and re-repeated by scores of independent investigators in every corner of the civilized globe. In Medicine, the same tendency is becoming yearly more and more apparent, in spite of the difficulties surrounding every inquiry into disease, from the very nature of its surroundings. The voice of authority is becoming less respected in our ranks, as in those of the other divisions of the great army of science. Even in our regular Society meetings, and in professional consultations, this is plainly to be seen. No longer is it the universal practice to bow with the submission of former years to the dicta of

the gray-headed doctor who has "forty years' practice" to back up his "experience;"—but, on the contrary, it is not at all unusual for the older man to inquire of his younger brother for some hints regarding new methods, and recent views,—confident that one who is fresh from drinking beer at Berlin, or the opera at Paris, or the "free-and-easy" of London,—will have some draught from the fountains of medical lore, something better than his "experience" to throw light upon the particular case in hand. Alas! too often does he find himself fishing in a weed-grown pond,—or hunting for water on an arid desert! He will hear of new views in plenty,—any number of new specula, or forceps, or needle-holders,—of—

*Bacilli by the hundred, and  
Bacteria even more;  
Of Cocci round in every wound,  
New Remedies by the score.*

But, when he comes out of the consultation, he will search in vain for any real good he can take hold of—for any real advance in therapeutics, beyond the smaller dose of the powerful alkaloid,—and he goes home musing perhaps on the wonderful advance in medical science, of which he has heard so much but seen so little.

Still, the fact remains that this is a transition period in the world's history,—men in all departments of knowledge and work (and women too), are "running to and fro through the streets," as in the days of Jeremiah, "seeking if there be any\* that seeketh the truth;"—and when they have found one who claims to be so seeking, they won't give him time to show what portion of truth he has found, but are off again, seeking another with a more wonderful truth than the last. In such periods, true progress is slow; and though things may be "booming" all around,—gold being found here, and silver there, in the broad hills of science,—most of them turn out to be mere "blow-outs," and rarely is there found among them a *true fissure vein*, reaching down into the central lode of eternal truth.

**Progress in Medicine** has always been slower than in any other department of knowledge,—and will always continue to be so, from the very nature of its constituent factors. In all positive science it is possible to rigidly apply the rules of the experimental method,—to advance from the known to the

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\* Jer., v., 1.

unknown, comparing the evidence on both sides of every step having two sides for comparison. If a new explosive compound be announced, for example, it requires only a few months to definitely settle the rank of the discovery, and determine its real value for blasting, gunnery, etc. Subjected to direct experiment, of which the results are tangible, it is easily compared with similar previously-known agents. So also in the science of Architecture, marine, domestic or public; let a new building material be found, or a new heating agent be devised,—experiments are quickly inaugurated, the exact capabilities of the new agent or method are ascertained; and the evidence for it being compared with that against it, a definite judgment can be rendered, and capital either takes it up or discards it entirely. But how very different is the procedure when any discovery is announced which pertains to any branch of the science of Medicine! As a rule, the only evidence attainable is that put forth by the affirmative side of the question,—and consequently the truth or falsity of the proposition remains unsettled for an indefinite period. Generation follows generation, and the oldest matters in medicine, like those in theology, are still in dispute!

Especially is this true of Therapeutics,—that aim and end of all other branches of medical education,—the goal of all we learn or do in every other direction,—the cap-stone of the pyramid of medical science! As of old, all roads led to Rome!—so in Medicine, all paths lead to Therapeutics! But how have we built up this supreme division of our science? By two distinct and widely-differing methods,—one being the direct pursuit of facts relating thereto,—the bricks in the therapeutical building;—the other comprising every observation, phenomenon or deduction, apparently established in the other departments of science, which seem, directly or indirectly, to affect its hitherto accepted doctrines,—the foundations of the building,—the mortar by which its bricks are held together. It is just as if a man should commence to erect a house, or a temple, intended to be as perfect as architectural science could make it, and to illustrate at the same time every theory, style and method thereof. Every kind of construction was to be employed, every sort of building material to be used, every style of design to be represented, and yet the finished structure to be a harmonious whole. Brick in one wall, stone in another, adobes here, wood there,—various parts of the roof to



be of slate, shingles, corrugated iron, tiles, thatch, etc.—the edifice to be lighted in part by gas, electricity, candles, etc.—to be heated by water in one wing, hot air in another, also by open fires, closed stoves, and every other method known,—what a strange edifice it would be when finished! But suppose that, after the contracts were signed, and the foundation in, and the walls well under way, the owner began to diligently study every new idea or device in every department of his temple's construction, and to begin to incorporate each apparent improvement as fast as it came out, necessarily displacing something somewhere to make room for each new discovery; taking out a stone arch here, or a window-sill there, to insert an iron or a composition one; removing a part of his tile roofing, to make room for some new combination of tar or canvas; pulling down a white marble pilaster, to erect in its place a red granite pillar; tearing off a frescoed wall finish, to try the effect of a lincrusta-walton panel in bronze and silver decoration; pulling out the plumbing, to replace the curved traps by right-angled ones; and keeping this up without limitation, how long do you suppose it would take to put the building in a habitable condition, not to think of the time required to finish it, if the man had unlimited means, and his heirs carried out the same policy? Would it not forever stand,—like the San Francisco City Hall,—an unfinished monument of constructive imbecility, to be spoken of as “Smith's Folly,” or by some similar designation. Yet that is precisely the method which has been pursued in erecting the temple of Æsculapius, in building the edifice of Therapeutics. There has been no lack of means or material—the evidence for every brick or stone in the structure has been ample—but, unfortunately it has been all of one kind, and that so positive, so enthusiastic, and so authoritative, that the brick went into the wall without its tensile strength being tested, only to be removed a short time after, giving place to another brick, similarly recommended, but exactly of the same kind. “*Cures*” by the score fill the medical journals for a year or two after any new medicinal agent or process is introduced, but we never see or hear of its *failures to cure*. We have never had any means of comparing the *pro* with the *con*, the evidence for with that against, any therapeutical proposition, and thereby making from the comparison a really scientific deduction as to the exact value of the agent or method, and its particular scope or field of influence.

When it is considered that "advance in medicine" really means "advance in therapeutics," it will be easily understood why ours has been so far behind the other sciences ; but this reason must be supplemented by another, and that is the overpowering sense of limitation which borders all our advance,—the knowledge that death *must* come to all, and that the very utmost success of either our science or our art must always be wretchedly incomplete ; only the postponement of the inevitable for a little while longer, at the best ; only the addition of a few more beats to the work of those hearts which—

"Stout and brave,  
Still like muffled drums are beating  
Funeral marches to the grave."

This limitation of our possible progress is coarsely expressed by the sneer, as old as Medicine itself, "*Medice, cura te ipsum!*" which has always voiced the contempt felt by the world at large for a science so essentially incapable of perfection as ours is.

What, then, is the measure of progress in Medicine, if it is to ever attain any very exalted place in the pantheon of science? The answer is, Therapeutics ! If, as a result of progress in any one or more of the branches of medical knowledge, the average span of human life is lengthened by ever so short a period; or if, while life lasts, it is rendered more free from suffering, by ever so little, Medicine *is* making progress ; but the ratio thereof is the ratio of the degree of success which these two attainments bear to-day to that which they bore at any particular time in the past.

However, this reduced to practice, means the progress of Therapeutics, in which I include Prophylaxis, *i. e.*, Preventive Therapeutics. Measured by this standard, can we truly say that the annual advance of Medicine is as great as is claimed for her by those whose minds are dwelling on the progress of the constituent sciences, the chemistry, pathology, bacteriology, biology, pharmacology, and all the other "*ologies*" which together make up the broad-based pyramid of Medicine?

I would answer, No! Let us not deceive ourselves! No matter how great the advance in any one of these branches of Medicine, or in several of them, true Medicine does not advance if Therapeutics stands still. "But," the optimist boomer will say, "every advance in any of its branches must,

in time, advance Therapeutics also, and so will benefit Medicine." This is begging the question, and assuming something which we cannot grant. It brings us, however, to the very pith of the argument, the central point of the whole question at issue, which is, that by too great a degree of activity in any one direction, by too much prominence given to any one branch of the edifice, and especially if this be accomplished by the use of false logic, of erroneous reasoning, the harmony of the whole structure is marred; the same false reasoning is applied in other directions, giving the builders a mortar which has no binding qualities, a foundation which has no permanent stability. Hence, the building goes on, rises high in the air, and its builders cry out daily in praise of themselves and in admiration of their work. But, some day or other, the tower which has been exalted on high above the rest, makes the whole mass top-heavy, and under the pressure of a severe storm it all comes down about their ears. The danger then is, that the energies of the workmen are exhausted; the disappointment brings on indifference, and instead of starting the work afresh on a firm basis, and profiting by the experience of the past, they will each grope around in the ruins for a few bricks to build a little hut for himself, leaving the reconstruction of the temple to the next generation of equally earnest but equally wrong-headed builders.

Medicine has made progress, however, and much of it is sure though slow, and more of it there would have been, except for the many obstructions which have ever stood, and are still standing in the path of her real advancement.

One of the greatest of these obstacles has been kept there by her votaries themselves, namely, the lack of organization which has ever been so conspicuous a feature of the medical profession. As a result, her priesthood has never had a thousandth part of the power which other priests have wielded, never stood as near to the thrones of the world as the hierarchy of other systems of ministration. Slayers of men have always reaped a richer harvest than saviors of men. For the boon of vaccination, which the English Parliament acknowledged to have saved to that State alone over 40,000 lives a year, Jenner received £20,000. How much would he have received from England at that time (1800) if, instead of saving 40,000 English lives a year, he had destroyed 40,000 French lives in one year, in one battle? Twenty thousand pounds a

year, at least, to him and his heirs forever, with a peerage, and all the honors that a grateful country could bestow, as in the case of Wellington, Nelson and many other great slaughterers.

Even to-day, in England, physicians are barely considered gentlemen, in the full sense of all which that word there conveys. Though a doctor's son, who goes into the church, into politics, the army or navy, the legal profession, the diplomatic career, or who becomes a great railroad contractor, a big brewer, or even a wealthy news-stand proprietor, may reach the exalted rank of a peer for eminent services to his country; the son who adopts his father's profession, however high his rank among his colleagues, can never hope to rank higher than a baronet before his Queen.

And why this invidious discrimination against so noble a career as that of a physician? Because the medical profession is not organized, as the legal one is,—as the church has ever been. And yet, look at the wonderful power for good to humanity which a united profession could wield! Numbering nearly 90,000 in the United States alone, 40,000 in Great Britain and Ireland, 4,000 in Canada, all countries in which the political influence of well-organized bodies of men is very great, the power of such an organism as we could make, if we only would, is almost inconceivable. Think of the hospitals, the asylums, the laboratories, the endowed colleges, the systematic investigations into every question of public health, the control of certain criminals, (as murderers, rapists, etc.,) for scientific investigations, the autopsies on all cases of pathological interest, made by a State pathologist; the effective restriction of the trade in poisons, (as alcohol, opium, etc.,) the prevention of crime by various measures, such as the castration of habitual criminals, the isolation and education of youthful ones, etc.; the prevention of disease by enforced cleanliness, the free supply of water by municipalities, governmental control of sewer-connections with living and sleeping rooms, of the milk supply, domestic animals, etc., including every known vehicle of disease; State control and regulation of prostitution, of marriage, etc.; preventing the marriage of diseased persons, of criminals and the insane,—there is no limit to the possibilities in the power of an organized medical profession in any civilized country in this world.

No longer would rotting relics, in the shape of saints' thigh-

bones, hang exposed in Russian churches, to be daily kissed by hundreds of people, though retaining in their innumerable interstices the germs of contagious disease, to poison the ignorant followers of a lying priesthood. The lips of strong men, healthy girls, and blooming children would have to seek some cleaner object of adoration than a mass of decomposing bone, its cavities swarming with the bacteria of whatever disease was most prevalent, besides those regularly inhabiting them,—such as the bacilli of tuberculosis, of syphilis, diphtheria, small-pox, etc., lurking in the cells of the *holy* relic, awaiting fresh victims among the unsuspecting votaries of a false faith, as any faith must be which inculcates a belief that any virtue, save one of disease and death, could lie in a dead saint's bones.

Another very great obstacle to the progress of Medicine is the almost universal *absence of logical training* in the education of the physician; though there is probably no profession, excepting the legal one, which makes more frequent demands upon sound reasoning than the medical. Daily encountering the most intricate problems which the human mind has ever solved, the physician should be trained from his very youth to reason correctly from cause to effect; to rightly observe facts, estimate evidence, detect fallacies, and arrive at a logical deduction. How few of the men who are daily inserting fresh bricks into the walls of the therapeutical dome of the medical temple know aught about the laws of complex effects arising from a plurality of causes, such as those which we deal with in the phenomena of life masked by the phenomena of disease? How many of these science-builders could even enumerate the operations of a deduction, or explain what is meant by induction and deduction? And yet they have been considered competent to solve the most intricate problems ever offered to the human understanding; for on their evidence, culled from journal articles, Society transactions, etc., has the rank of the many medicaments been decided, and their efficiency as weapons against disease taught in the medical schools for many a hundred years.

Back in the dawn of the historical era, in the great Greek epoch of Phidias, Plato and Hippocrates, medicine was very far behind the other sciences; and yet, when now we read the descriptions of disease left behind by the immortal Greek, we are fairly astonished at the amount of knowledge which he

possessed. No physician, who reads for the first time the treatise of Hippocrates *On the Prognostics*, can fail to wonder at the minuteness of observation, clearness of description, and power of inductive reasoning shown on every page to have been possessed by the author. But, when the "father of medicine" left the field of clinical observation for that of therapeutics, he floundered about in a veritable slough of absurdities, as almost every succeeding therapist in after times has done, and as many of them are still doing. Still, it is a wonderful fact, and a matter for serious thought, that out of his 412 aphorisms the 377 pathological ones have "stood the test of the experience of twenty centuries,"\* and that his two rules of practice, "*contraria contrariis*" and "*similia similibus*," formulate the fundamental principles of the therapeutics of to-day. Well might we almost believe that "men were gods" in those days!

Had the builders of medical science walked in the path marked out by the clinical work of Hippocrates, its progress would have kept pace with the utmost possibilities of its advance; but eras of speculation, of guessing, of striving to account for all things, with the dogmatic dicta of masters and schools, who knew of no other way of keeping up their authority—these, and many other equally injurious methods throughout the centuries which followed—absolutely barred out all acquisition of those multitudinous facts and observations by which alone can a science be built up. At last, however, with the beginning of the seventeenth century, dawned the morning of science, ushering in the experimental method, the bright sun-light, under whose genial beams all knowledge grew up into the full stature of manhood now nearly attained. Galileo, standing up in Italy, the very grave in which science was buried centuries before, sounded the reveille of its awakening, and then began that incessant activity in chemistry, in physics, in biology, botany, etc., which forced into action the fundamental branches of medical knowledge; real work commenced in Physiology and Pathology and Anatomy, and the foundations were laid for a *Science of Medicine* in every department excepting Therapeutics, which still plodded along in the ancient ruts of empiricism. It certainly seems very strange that men should have been content, as they were for nearly

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\*Russell—History and Heroes of Medicine, p. 62.

two centuries after this time, to teach their students that a certain herb was good for a certain disease, because somebody else had said so, while all around them, in every department of science, positive methods were being inaugurated, research was taking the crown from authority, and existing theories being tried in the alembic of experimentation and subjected to the white heat of systematic investigation ! Yet, after all, it is not so much to be wondered at when we remember that some are doing so still, and not alone that, but are actually proclaiming that it is the only true path whereby we can traverse the maze of therapeutical knowledge !\* All along the centuries of complacent empiricism there were occasional revolts against the prevailing doctrine, and every one of the schismatics went off on an idea of therapeutical reform. But only one ever had any vitality, the rest quickly died out and made no impression upon the therapeutics of the profession at large.

In the middle of the eighteenth century, the illustrious Haller, the father of modern physiology, reached up to the dome of the temple and formulated the doctrine of what is now called *Pharmacology*, or more properly *Pharmacodynamics*, as the only true and scientific basis for therapeutics. In the preface to his Swiss Pharmacopœia (*circa* A. D. 1755) occur the following remarkable directions :

“ In the first place, the remedy is to be tried on the healthy body, without any foreign substance mixed with it ; having been examined as to its odour and taste, a small dose is to be taken, and the attention directed to all effects which thereupon occur ; such as upon the pulse, the temperature, the respiration, the excretions. Having thereby adduced their obvious phenomena in health, you may pass on to experiment upon the sick body.”

Forty or more years after these rules were laid down *ex cathedra* by Haller, the central idea contained in them was incorporated, as one of the main pillars, in a medical edifice then being erected in Germany. In the course of construction this pillar became so buried beneath a superstructure of palpable absurdities, that the medical profession, in its anxiety to steer clear of the whole mass, almost forgot the humble corner-stone, appropriated from the teachings of one of its own greatest chieftains. While, however, the masses of the profession, blinded by its prejudices, turned away from everything which savoured of drug experimentation, a few in every

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\**Hartshorne*, Essentials of Medicine, 5th edition, p. 24.

country were quietly working on the lines of the Hallerian dictum ; and as a result of their labors the present generation has seen the development of an idea announced 130 years ago, but now inspiring the minds of teachers and students all over the civilized world.

Now, the *opprobrium medicinæ*, therapeutics, is making rapid advances on Haller's lines. Aided by the labors of the chemists, who have given us the active principles of plants, competent observers all over the world are working out, by positive experimentation, the powers of drugs, and rapidly building up an accurate and positive *Materia Medica*, instead of the mass of guess-work, speculation and quotation which formed the *Materia Medica* of the past.

It has been the fashion, in some lay circles, and even among some half-educated professional cliques, to echo the "*quack quack*" of the charlatans, the claim that our advance in therapeutics and physiological drug-experimentation is due to the influence of the so-called homœopathic school. There never was a more fraudulent claim set up, not even in your mining contests or Spanish land-grant history. Those who advance the claim, and those who support it, point to the decreased dosage in regular practice during the last twenty-five years, to our present activity in drug-experimentation, to our use of minute granules in place of large pills, and to the admission of milk-sugar triturations into the last edition of our pharmacopœia, as evidence for their proposition. But our decreased dosage is chiefly due to the chemists, who, by extracting the alkaloids\* of plants, have enabled us to administer, in a minute and tasteless granule, all of the active drug which formerly required a tablespoonful of some nauseous infusion or decoction to carry it into the organism. Again, the introduction by the regular pharmacutists, of the class of preparations called *fluid extracts*, so greatly concentrated as compared with the older tinctures, enables us to use the same medicinal energy with a drop to-day which necessitated the employment of half a teaspoonful twenty years ago. Moreover, as Haller's work of drug-experimentation goes on and becomes more accurately defined, we ascertain the fact that drugs have different actions in different doses ; and hence we are now

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\*Morphine, discovered in 1817 ; Strychnine, in 1818, and Brucine in 1819 ; Quinine, in 1820, and so on.



using drugs in small doses for purposes for which they were never used at all in olden times. But such new uses of smaller doses does not decrease the larger dosage in cases and for purposes for which only those larger doses will suffice. As to our activity in drug-experimentation, instead of following the homœopaths, we are simply following our own masters on a line which was inaugurated before Halmemann was born, and which, but for the obloquy with which he invested it, would have been steadily pursued these past 130 years. Homœopathy, instead of promoting physiological drug-experimentation, retarded it fully half a century, by causing it to be associated with so much of folly, so many absurdities. Lastly, as to the milk-sugar triturations, they too are no invention of homœopathy, but were in common use among the Arabian physicians of the thirteenth century, and were well known in England 100 years ago. Their subsequent adoption by homœopathists invested them with the character of a badge of sectarianism, just as the straight collar, fastening behind, marks the Roman Catholic priest, and the broad-brimmed silk hat an Anglican bishop. Even at the present day, if one of us were to dispense a trituration in his office, using the small powder papers, and a small envelope to cover them, 99 out of 100 of the laity would instantly class us as homœopathists. So superficial are people in forming opinions, and so influenced by appearances in the most important matters of life ! But what are the facts ? In England and this country a trituration has been official for many years, *Pulvis Doveri*, which, though called a powder, is in every respect essentially a trituration, containing as a diluent a hard substance (Potassium Sulphate or Sugar of Milk), in order to break up and finely divide the particles of the active ingredients. Another trituration, official in both countries, is the *Pulvis Elaterini Compositus*, a regular Sugar of Milk trituration, of  $2\frac{1}{2}$  per cent. strength there, 10 per cent. here. Less prejudiced against a name, our American revisers boldly gave this preparation its proper title when inserting it into the *Pharmacopœia* ; the English revision still retains the name "Compound Powder," though it has but the one active ingredient, the *Elaterin*. The insertion of the class *Triturations* into our *Pharmacopœia* eight years ago was simply the recognition of a very old class of preparations, which had dropped out of general use for many years, but which were being revived in practice, as a convenient and efficient method

of dispensing. Many drugs, as has been well known from remote times, are rendered more active by grinding with a very hard diluent, which breaks up their particles into minute ones, and thereby the drug is presented to the absorbent vessels in the best possible shape for endosmosis through their walls and prompt conveyance to the blood, and the liability of its passing out of the intestinal canal with the excreta is lessened. In this there is not the slightest hint of accession to the homœopathic idea of *increased potency by prolonged trituration and attenuation of the original drug*, which is the *opprobrium* placed by that sect on a very useful preparation. But we must not forget that they have never had a monopoly of triturations, however they may claim the name. Ever since Pepsin has been used medicinally it has been prepared and sold as a trituration by our druggists. Lacto-peptine, Saccharated Pepsin, and all dry preparations of this ferment, are Sugar of Milk triturations in fact, if not in name. But, even if we were indebted to the homœopaths for these preparations, our use of them would in no wise commit us as favoring a system which, to those who understand it and retain their mental faculties, is a mere hash of absurdities, only retained by its own votaries for sake of the influence which a sectarian name and position always exerts upon the people. If triturations are a good form for administering certain drugs (and it is a fact that they are), why should we deprive ourselves of them because they happen to be made a badge of sectarianism through popular ignorance? Fortunately we are getting out of our baby clothes and over all such wretched puerility, and are now free to use triturations without incurring professional dishonor.

It is not in such matters that homœopathy has influenced or will influence the medical profession. It has been of service, however—a service chiefly negative in character. It has taught us again the old lessons of all ages, to wit: that nature is the real physician, and that the living organism is itself competent to cure all its curable disorders, which it will do if simply let alone, unhindered by the misplaced zeal of those who would bend nature to their views, instead of humbly following in her footsteps. This is the great lesson which professional medicine requires to be re-taught every century or so—to bring it down from the pedestal on which human pride and educated ignorance exalts it. For the teaching of this lesson was homœopathy sent into the world, and it will only

depart when its mission is fulfilled and that lesson has been well learned.

There are, alas ! too many proofs about us on every side that we are not learning the lesson of nature's power. Such, for instance, are the footprints we meet occasionally in the professional sand of the drug store, recent signs that the demon of poly-pharmacy is not dead yet, but even in this scientific age he lurks around, seeking whom he may devour. I have one of his hoof-marks here, a giant footprint too, big enough to frighten the Robinson Crusoes of the profession clear off the dry land and send them drifting to destruction on the ocean of discouragement. It was prescribed, says the *Canada Medical and Surgical Journal*, of May, 1883, by one of their most eminent local physicians, and was dispensed by a Montreal druggist. It reads thus :

R. Potassii Bromidi, 2 drms.  
 Potassii Chloridi, 2 drms.  
 Potassii Iodidi, 2 drms.  
 Potassii Acetatis, 2 drms.  
 Potassii Bicarbonatis, 2 drms.  
 Ammonii Chloridi, 2 drms.  
 Ammonii Bromidi, 2 drms.  
 Extracti Colombo, 2 drms.  
 Extracti Gentianæ, 2 drms.  
 Extr. Taraxaci, 2 drms.  
 Ferri Pyrophosphatis, 2 drms.  
 Syrupi Ferri Iodidi, 1 oz.  
 Tinct. Valer. Ammoniacæ, 1 oz.  
 Acid Phosph. Diluti, 1 oz.  
 Pepsini, 30 grs.  
 Tinct. Cannab. Ind., ½ oz.  
 Tinct. Digitalis, ½ oz.  
 Syr. Calcii Lactophosphat., 2 oz.  
 Glycerini, 2 oz.  
 Syr. Tolutan, 2 oz.  
 Tinct. Cinchonæ Comp., 2 oz.  
 Liq. Arsenicalis, ½ drms.  
 Tinct. Arnicæ, ½ drms.  
 Extr. Nucis Vom., 6 grs.  
 Extr. Conii, 6 grs.  
 Extr. Belladon, 6 grs.  
 Extr. Hyoscy, 6 grs.  
 Chloroformi, 10 drops.  
 Quininæ Sulphat, 1 drms.  
 Alcoholis, sufficient to make 16 oz.

Sig.—A dessertspoonful thrice daily, in milk, after each meal.

You may say that this is an extreme case, and not illustrative of general professional practice. It is to be hoped that such is the case, for the sake of poor sick humanity. But here is one, prescribed three weeks ago, in the city of San Francisco, by a physician of large practice, for a case of remittent fever :

R.   Quin. Sulphat., 1 drm.  
       Ac. Nitro-hydrochlor., 2 drms.  
       Tinct. Belladon., 4 drops.  
       Tinct. Nux. Vom., 20 grs.  
       Liq. Potas. Arsenit., 20 grs.  
       Elixir Cinchonæ, 3 oz.  
       Elix. Lactopeptine, mix.   To make 6 oz.

Two drachms in water every four hours.

No wonder that therapeutics languishes ! We might well despair of it entirely, did we not know that, after all, the *tendency* of the present age is, to quote Dr. Phillips, " towards mono-, rather than poly-pharmacy, and prescriptions with the orthodox 'adjuvans' and 'corrigens' are less frequently seen than formerly."\*

### *Progress in Therapeutics.*

In order that we may form a clear idea of the position of general medicine, it is necessary that we look back over the work of the past year or two and see what is being done on the line of therapeutics, including, of course, the studies of the action of drugs, so essentially preliminary to their employment as remedies.

The most prolific work, of late, has been upon the so-called *New Remedies*, which are crowding into the market faster than they can be examined and reported upon. Especially active have the pharmacologists been with regard to those curious products of the chemical laboratory which are built up, as it were, by the substitution process, by which various organic radicals are substituted for one or more atoms of hydrogen in the wonderful hydro-carbon compounds, many of which are constituents of coal oil. The action of these substitution products is being closely worked out, and broad deductions being made therefrom, so that in very many instances the therapeutical value and even the definite application may be foretold, and have been, with perfect accuracy. Such prophetic deter-

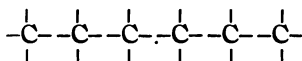
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\* *Materia Medica and Therapeutics*, by Phillips, edited by Piffard, N. Y., 1879, p. 17.

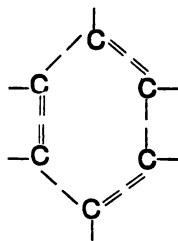
minations are comparatively easy in the case of a single carbon compound, such as that of C with H alone, or C with O, or S, or Cl alone ; but those which contain more than two of the elementary bodies, and especially those having all four members of the great tetrad C O H N, are very apt to have a very complex chemical constitution and a correspondingly varied physiological action. The group of artificially prepared organic compounds has recently been enriched with some of the most valuable remedies in the materia medica, and its importance is daily growing more apparent ; so much so that, among European pharmacologists, the belief is gaining ground that in the future these agents will entirely replace those of the vegetable materia medica.\*

As in Inorganic Chemistry we have the two grand divisions of Metals and Metalloids, so in Organic Chemistry, the chemistry of the Carbon Compounds, we have two grand divisions, differing from each other only in the mode in which the constituent atoms are linked together to form the molecule. These divisions are the

FATTY SERIES, in which the carbon atoms are supposed to assume the form of an open chain, with their tetrad affinities arranged thus :



AROMATIC SERIES, in which the carbon atoms are supposed to assume the form of a closed chain or ring, with their tetrad affinities arranged thus :



These two grand divisions are subdivided into various groups, some of which include many old friends of the physician, well-known and highly prized, while others are new-comers into the medico-chemical arena.

That we may clearly understand the relationship which the new agents bear to the old ones, let us look for a moment at the membership of these carbon groups.

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\* Brunton—*Pharmacology, etc.*, third edition, page 757.

*Fatty Series of Carbon Compounds.*

*Simple Compounds*—Carbonic Acid ( $\text{C O}_2$ ), Carbon Bisulphide ( $\text{C S}_2$ ), Hydrocyanic Acid ( $\text{H C N}$ ), Acetic Acid ( $\text{C}_2\text{H}_4\text{O}_2$ ), etc.

*Hydro-carbons of the Marsh-gas ( $\text{C H}_4$ ) series*—Benzin, Vaseline (Petrolatum), Paraffin, etc.

*Alcohols* Hydrates of the Radicals,—Methyl, Ethyl, Propyl and Amyl Alcohols, also known as Wood-spirit, Wine-spirit, Potato-spirit, etc., respectively.

*Aldehydes*, (Alcohols minus  $\text{H}_2$ )—Acetic Aldehyde, Paraldehyde.

*Ketones*, (Aldehydes minus  $\text{H}$ , plus a radical)—Hypnone.

*Ethers, Simple* (Oxides of Alcohol-radicals)—Ether, *i.e.*, Ethylic Ether.

*Ethers, Saline*, (Salts, as it were, of Alcohol-radicals)—Ethyl Sulphate, Ethyl Acetate (Acetic Ether), Ethyl Nitrite (Nitrous Ether), Amyl Nitrite, Nitroglycerin.

*Hydrocarbons of the Terebinthene ( $\text{C}_{10}\text{H}_{16}$ ) series*, including the numerous isomerides contained in Oil of Turpentine, and their derivatives, as Terebinthene, Terebene, Terpin, Terpinol, Camphene, Caoutchouc, etc.

*Haloid Compounds*, (like the Haloid Salts of Metals)—Ethyl Bromide (Hydrobromic Ether), Ethyl Iodide (Hydriodic Ether), Methylal (Methylene Di-methyl Ether), Chloral, Butylchloral, Bromal, Methylene Bichloride, Chloroform (Dichlor-methyl-chloride), Iodoform (Formyl Iodide), Iodol (Tetra-iod-pyrol), Urethane (Ethyl Carbamate).

*Aromatic Series.*

All these substances originate in the six-atomed carbon ring fully saturated by  $\text{H}$ , known as the Phenyl Hydride or Benzene Ring ( $\text{C}_6\text{H}_6$ ) and formed by substitution (instead of addition), as follows :

$\text{C}_6\text{H}_6 - \text{H} + \text{H O}$  (Hydroxyl) =  $\text{C}_6\text{H}_5\text{O H}$ , Phenyl Alcohol, *Carbolic Acid*.

$\text{C}_6\text{H}_6 - \text{H} + \text{N O}$  (Nitroxyl) =  $\text{C}_6\text{H}_5\text{N O}_2$ , Nitro-benzene.

$\text{C}_6\text{H}_6 - \text{H} + \text{N H}_2$  (Amidogen) =  $\text{C}_6\text{H}_5\text{N H}_2$ , Amido-benzene, *Anilin*.

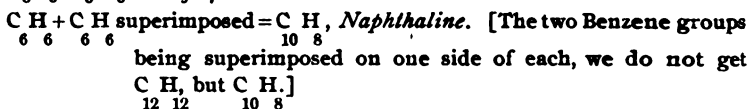
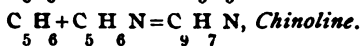
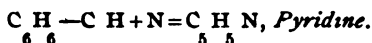
$\text{C}_6\text{H}_6 - \text{H} + \text{CO.OH}$  (Carboxyl) =  $\text{C}_6\text{H}_5\text{CO.OH}$ , Phenyl-formic (*Benzoic*) *Acid*.

$\text{C}_6\text{H}_6 - \text{H} = (\text{H O})_2$  (Hydroxyl)  $\left\{ \begin{array}{l} \text{Ortho-di-hydroxy-benzene* Pyrocatechin} \\ \text{Meta-di-hydroxy-benzene* Resorcin} \\ \text{Para-di-hydroxy-benzene* Hydroquinone} \end{array} \right.$   
 $\text{C}_6\text{H}_4(\text{O H})_2$

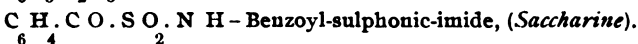
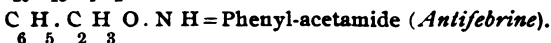
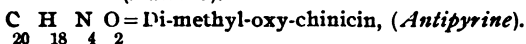
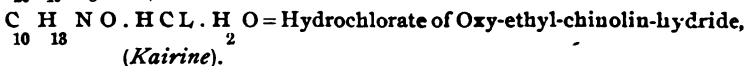
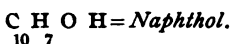
$\text{C}_6\text{H}_6 - \text{H} + (\text{H O})_3$  (Hydroxyl) =  $\text{C}_6\text{H}_3(\text{O H})_3$  Tri-hydroxy-benzene, *Pyrogalllic Acid*.

$\text{C}_6\text{H}_6 - \text{H} + \text{H O}$  and  $\text{C O.O H} = \text{C}_6\text{H}_4\text{O H.C O.O H}$  ( $\text{H C H O}_2$ )  $\left\{ \begin{array}{l} \text{Salicylic Acid*} \\ \text{Oxy-benzoic Acid} \\ \text{Para-oxy-benzoic Acid} \end{array} \right.$

\* Isomeric, differing only in the positions of the substitutions in the Benzene ring.



Other compounds of the same series, and derivatives of the above, are the following named substances, the list comprising most of the new antipyretics and analgesics, viz.:



There is an erroneous idea prevalent that these new products of the chemical laboratory are obtained from coal-tar and that they exist therein. An abstract of the process by which the last-named substance is prepared will serve to illustrate the methods employed in "coal-tar chemistry," so called. Starting with *Toluene* (Methyl-benzene,  $\text{C}_6\text{H}_5\text{CH}_3$ ), a hydrocarbon found in coal and in coal-tar, also in wood and in Rangoon tar, (a native mineral oil), and also one of the constituents of commercial Benzene, it is acted upon with Sulphuric Acid at  $212^\circ$  F., by which para- and ortho-toluene-sulphonic acids are formed. The sodium salts of these acids are next prepared and then converted into sulphonic chlorides. The ortho-chloride is treated with ammonium carbonate and thereby changed into an *amide*, which is oxidized and finally treated with a dilute mineral acid, *Saccharine* being precipitated. Consequently this interesting substance, possessed of such extraordinary sweetening power, is not, as many believe, obtained from coal-tar, or coal-oil, but is a laboratory product, formed as a result of numerous reactions, starting with a hydrocarbon obtainable from coal-tar and from several other sources as well.

That these bodies have a strong relationship to the vegetable alkaloids has been for some time suspected, and is becoming

more and more apparent as new facts are developed and new derivatives formed from them. For example: *Chinoline* ( $C_9H_7N$ ) may be obtained from *Quinine* ( $C_{10}H_{12}NO$ ) by the destructive distillation of the latter alkaloid with potassium hydrate; and it is also found in coal-tar, and may be made synthetically by heating Anilin and Nitro-benzol with glycerin in the presence of a dehydrating agent. So also *Morphine*, treated with  $HCl$  acid and heat under pressure, gives up  $H_2O$  and becomes Apomorphine, a very different article indeed; but if treated with Nitric Acid, or if heated with water under pressure, it takes up  $H_2O$ , and yields Tri-nitro-phenol (Picric Acid), one of the Benzene derivatives.

**PHARMACOLOGICAL DEDUCTIONS.**—From the numerous experiments made upon animals and man with the new members of these groups, some valuable deductions have been formulated and are stated by Brunton as follows:

The most marked action of the lower members of the *Fatty Series* is stimulation and anæsthesia of the nerve centres, also sensory-paralyzant.

*Aromatic Series* is antiseptic and antipyretic, and also motor-paralyzant.

In the first group we find that

*Simple Carbon Compounds*, as  $C_2O$ ,  $C_2S$ ,  $C_4Cl$ , all tend to paralyze the nervous system in the definite order of (a) thought, (b) sensation, (c) reflex action.

*Carbon-Chloride Compounds* are powerful muscular poisons, destroying the contractility of both voluntary and involuntary muscular fibre.

*CHO Compounds* are generally anæsthetic (alcohol, ether), some being irritant (acetic acid).

In the Aromatic Group we find that very slight changes in the chemical constitution of some members cause very great modifications in their antiseptic powers, even isomeric bodies differing greatly in this respect; for example:

*Salicylic Acid* is antiseptic, but its Sodium Salt is not, nor are the isomeric bodies, meta- and para-oxybenzoic acids.

Furthermore, while the members of this series especially affect the motor nerves (as the fatty series does the sensory), producing tremor, convulsions and paralysis, great modifications are observed in their action according to slight changes in their composition, thus:



HO (hydroxyl) added to the Benzene ring, intensifies convulsant action, *e.g.*, Phenol.

N added, as in the Pyridine and Chinoline series, tends to paralysis of respiration.

H, in the CHN series, intensifies the physiological action in direct ratio as to its quantity, *e.g.*, Chinoline (CHN),  
 Coniine (CHN), Nicotine (CHN).  
<sub>8 15</sub> <sub>10 14 2</sub>

Doubling the bases of the Pyridine series by condensation makes the compound more active and the action entirely different from that of the simple base.

### *Quinine Substitutes.*

As the germ-theory of zymotic disease has grown in favor, the great therapeutic desideratum has seemed to be an agent possessing decided antipyretic power without a depressant action upon the heart or an irritant one upon the stomach; also a safe antiseptic, which will destroy or render inactive microbes, without injuring the organism containing them. Hitherto *Quinine* has been the only substance approaching these requirements in any marked degree; but its cost, the difficulties attending its administration, and its injurious action so often seen upon the special senses and the stomach, have been great drawbacks to its free employment. The fact that a very slight alteration in the chemical composition of the members of the Benzene series of Carbon compounds makes a very great change in their physiological actions, has been the stimulant factor in the hunt of the physio-chemists for an artificial compound which would fill the above requirements and be a perfect substitute for quinine. The search has been a long one, and is still going on, the modern "philosopher's stone" not yet being found, though several agents have, from time to time, been brought forward and each one highly praised as the long-sought specific. But as one after another came into general use it passed through very much the same history as its predecessor. At first lauded to the skies, it gradually developed defects of various kinds, and gradually lost favor, so that at present there is no one which can be said to retain the position at the head of the group of internal antipyretics and antiseptics so long occupied by quinine. The principal substances which have been on trial in this connection are the following named, the chemical relations of which I have already discussed, *viz.*:

<i>Chinoline</i>	<i>Resorcin</i>	<i>Antipyrine</i>
<i>Kairine</i>	<i>Pyrocatechin</i>	<i>Acetanilide</i>
<i>Kairolin</i>	<i>Hydroquinone</i>	<i>Naphthaline</i>
<i>Thallin</i>	<i>Salicylic Acid</i>	<i>Saccharine.</i>

Of these the last two are valued chiefly as antiseptics, and the last named has another and a valuable quality of its own, which will be referred to in another place. The others have been on trial as antipyretics, some of them for several years, and, one after another, have been deposed from the position of the ideal antipyretic at first claimed for them, chiefly on account of the dangerous depression, even collapse, which they produce, each one in some degree. *Chinoline*, for example, induces severe rigors and extreme depression; *Kairine* causes cyanosis, nervous disturbances, severe rigors and collapse; *Resorcin* excites greatly the cardiac vascular supply (Cæsari), besides causing an extreme degree of diaphoresis, and having but a short antipyretic period; *Salicylic Acid* and its salts greatly depress the cardiac action and lower the excitability of the nerve centres to a dangerous degree. The contest has narrowed down to a question between *Antipyrine* and *Acetanilide* (Antifebrine), and on account of the importance of this class of agents in practical therapeutics I have thought it well to review the characteristic features of these two members thereof.

**Antipyrine** is a powerful antipyretic and a very efficient analgesic, ranking next to Quinine as to its influence on pyrexia, and next to Morphine for its power over pain. Besides these valuable qualities, it is endowed with antiseptic and disinfectant energy of high rank, is a local anæsthetic, a mydriatic, a hemostatic, and a feeble hypnotic. It slows the respiration, but does not materially affect the rate or force of the heart-beat. In some subjects it causes nausea and vomiting, in some a sense of heat and perhaps even burning sensations, about the head, and in others it induces an erythematous eruption. It is rapidly absorbed, and as quickly eliminated, appearing in the urine about three hours after its ingestion.

Soon after the administration of a full medicinal dose (say 30 grains), there is a brief stage of stimulation, during which the heart's action is slightly increased, and the patient experiences a subjective sensation of heat, with flushing of the face. This is soon followed by profuse sweating, and rapid lowering of the temperature in fever, which is accompanied

by some slowing of the pulse, and depression, the latter being usually slight in degree, but in some recorded cases has been very great. The reduction of temperature begins in about half an hour after the ingestion of the drug, and lasts from one to ten hours, according to the size of the dose, the average period being placed generally at about two hours. In extent it is usually from 3 to 5 degrees; though this also varies with the size of the dose—in one case a fall of 12° F. was observed. When administered conjointly with *Kairine*, the mixture has produced a greater fall, with a longer period of apyrexia than occurred when an equivalent amount of either drug was given alone. When the effect of the dose has passed off, the temperature commences to rise again, the onset being usually preceded by a chill, which, however, is slight when compared with the severe rigors and dangerous depression which occur at the corresponding period under the action of *Chinoline*, *Kairine*, and other members of the group. The profuse sweating may be prevented by a small advance dose of *Atropine* or *Agaricine*.

On the normal temperature *Antipyrine* makes but little impression, about 1-10 gr. A moderate dose given to a healthy person produces some slight nausea, ringing in the ears, a slight elevation of arterial tension, some considerable sweating, a sedative action on the brain, dilatation of the pupils, and some slight after-depression.

THE ANTIPYRETIC POWER of this agent is due to its possessing three of the five actions which can cause lowering of the body temperature. These three are—

- (1.) *Diminishing tissue-change, and therefore lessening heat-production.*
- (2.) *Dilating the cutaneous vessels, allowing free radiation of heat from the surface,—thus promoting loss of heat, which is also aided by the—*
- (3.) *Causing sweat, and refrigeration of the body by its evaporation.*

THE ANALGESIC OR PAIN-RELIEVING POWER of *Antipyrine* is very considerable, but is somewhat closely related to rheumatic pain and to neuralgia of rheumatic origin. It may be used by hypodermic injection, as it is freely soluble in water, and not very irritant to the tissues, if properly administered.

In toxic dose, the principal energy of this agent is exerted

upon the blood, which it decomposes, altering the shape of the red corpuscles, and separating the hæmatin therefrom.

Antipyrine is a white crystalline powder of bitter taste; soluble in its own weight of cold water, still more so in hot or acidulated water, and less soluble in alcohol, chloroform, ether, etc. It gives an intensely *red* color with Ferric Chloride, and a beautiful *green* with Nitric Acid. The dose is for an adult, 20 to 30 grains hourly for three hours, as an antipyretic; 15 to 20 grains for other purposes; to children, one grain for each year of age, for three successive hourly doses. For hypodermic use, the same dose may be dissolved in one-half its weight of hot water, and injected in the ordinary way, which is to be preferred when it causes vomiting. It has but little taste, and though that is bitter, it is not unpleasantly so,—in which respect it has a great advantage over Quinine. A suitable menstruum is sweetened water,—the solutions being prepared as follows:

For children:  $1\frac{1}{2}$  drms. in 4 ozs. of syrup and water, each drm. containing 3 grs.

For adults: 4 drms. in 4 ozs. of syrup and water, each drm. containing 8 grs.

THE THERAPEUTICS of Antipyrine are deducible from its physiological action, *fever and pain* (of rheumatism or neuralgia) being its most suitable fields of action. It has been employed with very decided benefit in acute rheumatism,—hyperpyrexia from any cause, as typhoid fever, phthisis, erysipelas, pleuritis, pneumonia, surgical fever, etc.—neuralgiæ of rheumatic origin, as lumbago, sciatica, headache, hemicrania, facial neuralgiæ, etc.,—painful affections of hysteria,—pain from cerebral tumors, and cardiac disease, and that of dysmenorrhœa.

In all the febrile conditions above enumerated it caused prompt and continued reduction of temperature, but in many cases there were also produced unpleasant symptoms of greater or less intensity, as follows:—nausea and vomiting, rigors and collapse in the course of typhoid fever (Wichmann); exhausting sweats and nausea in pneumonia (Karst); rash resembling that of scarlatina, 15 cases (Israel); 2 cases resembling erythema (Bloomfield); 4 cases resembling measles (Wichmann); violent palpitations, intense cyanosis, pulse 132, œdema, ephemeral amaurosis, pruritus, and urticaria (Guttman); sloughing of the tissues of the arm from hypodermic use

(Hays); great local swelling and inflammation and pain from hypodermic use (Sée); granular and fatty degeneration of the liver and kidneys (Porter).

One writer\* claims that autopsies of hospital cases treated with Antipyrine, Kairine, Thallin, etc., very frequently showed granular and fatty metamorphosis of the liver and kidneys; and he asserts that experimenters, taking these drugs themselves, had found casts and albumen in their urine; all of which he ascribes to the drugs. I think that I have seen several corroborative instances of this as an occurrence, but would be more inclined to ascribe the degenerative changes to the high temperature which called for the exhibition of the antipyretic. All pathologists agree that fatty and granular degeneration are produced by prolonged pyrexia, especially in the heart-muscle; hence the necessity for antipyretics.

At the Hotel Dieu, Prof. Germain Sée has been using Antipyrine very extensively during the past year, and sends charming reports of its power in headache, migraine and facial neuralgia, but all with hypodermic injections of the drug, which have caused him much trouble, in preventing the bad local effects which so often arise therefrom. His rules are—to introduce the needle deeply into the tissues,—to expel the solution very slowly, aiding its diffusion by slight massage at the same moment,—to use diluted solutions, about 16 grains to the fluid drachm,—and to make several small injections, instead of one large one. When he has to inject a dose of 15 or 16 grains, however, at once, he makes a solution of that quantity of Antipyrine in the same of water, and about gr.  $\frac{1}{4}$  to  $\frac{1}{3}$  of Cocaine Hydrochloride, the latter for its local action on the tissues at the point of injection. This, he says, gives wonderful results in facial neuralgia, tic douloureux, etc., using at the same time, however, about 75 grains of the drug per diem internally.

**Antifebrine, Acetanilide, or Phenyl-acetanilide**, is the only rival at present which divides the honors with Antipyrine. It is a derivative of Anilin, obtained by the action thereon of glacial acetic acid, the result being to substitute Acetyl for one atom of Hydrogen. It is very sparingly soluble in cold water, but freely in alcohol, ether, wine, etc. Its

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\* Dr. Porter, at meeting of N. Y. Pathological Society, N. Y. Med. Journal, July 30, 1887.

dose is much smaller than that of Antipyrine, being only gr. ij—x or xv, not more often than thrice daily, nor to exceed gr. xxx in the 24 hours. It may be administered in whisky or brandy diluted and sweetened, or in compressed tablets or powders.

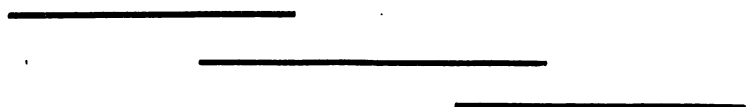
Antifebrine is an efficient antipyretic, and besides is markedly analgesic and anti-spasmodic, lowering the reflex action of the spinal cord, and inhibiting the sensibility of sensory nerves. It raises the arterial tension and slows the heart in corresponding ratio. Compared with the action of Antipyrine, that of this drug shows a slower influence on the temperature, but more lasting; commencing, as it does, in about an hour after ingestion, and lasting from 3 to 7 hours (Brunton). It is markedly diuretic, (*Antipyrine* diaphoretic),—is a cerebral, muscular and vaso-motor stimulant (*Antipyrine* a cerebral sedative),—requires a dose of only 5 grains (*Antipyrine* 20) to affect the temperature,—but like Antipyrine its continued use begets a tolerance of its action, and it has little or no effect on the normal temperature. The reduction of temperature corresponds in degree and duration to the size of the dose; the pulse is slowed, and quiet sleep generally follows. There is no vomiting as a rule, but there is a marked tendency to collapse, preceded by severe chill, rigors and cyanosis, during the period of depressed temperature. It profoundly depresses the heart; and this organ, together with the liver and kidneys, is found in a state of fatty degeneration, in animals poisoned by it. A toxic dose destroys the ozonizing function of the blood, forming methyl-hæmoglobin as a result of its action on the red corpuscles.

When first brought out, Antifebrine was thought to be the long-sought-for antipyretic. It soon developed marked analgesic powers, and was used with brilliant results in trigeminal neuralgia, migraine, anæmic cephalalgia, diffuse nervous headache, cicatricial neuralgia, etc., by Seifert, of Vienna, as recently as last October; and by Prof. Kotovshcheski, in Kagan, in typhoid and other fevers. The latter observer found that a single 4-grain dose reduced the temperature within an hour 2° to 4° F., the reduced temperature persisting from 1½ to 3 hours; and by repeating these 4-grain doses every 2 hours the temperature could be kept down to normal all day. At the same time the frequency of the pulse was diminished and its tension increased, and the excretion of urea was augmented.

The patients liked the drug, and no ill effects were ever observed from its use. (*Lancet*, Jan. 28, 1887.)

Such is a sample of the favorable reports on this drug. But on the other hand, numerous observers since write of cyanosis, quick and feeble pulse, coma, and collapse, after only 3 doses of 5 grains each every 4 hours. The drug being discontinued and replaced by whiskey and digitalis, the symptoms depart entirely in a few hours,—but that physician can never be tempted to try Antifebrine again.

**The Dose and its Repetition.**—In the practical employment of these two drugs, I believe that it will be ascertained that the dosage used has been too large, and has been repeated at too short intervals. One great difficulty about the teaching of *Materia Medica* is, that heretofore no effort has been made to fix the time of repetition for each drug, or rather, to ascertain the exact period when a drug's elimination begins and how fast that elimination goes on. If this were known for each drug in the *Materia Medica*, we could approximately keep up a certain drug-action by the frequent exhibition of much smaller doses than the one originally administered, for it would only be necessary to supply the quantity lost *up to that time* by elimination. Our present method seems to be somewhat as might be illustrated by the following diagram. We give Quinine in a 6-grain dose, say every 8 hours, expecting its renewal to be required after 8 hours—



but suppose that it really takes 12 hours to be eliminated, what is the result? Why! as the diagram shows you, the patient, instead of being under a steady 6-grain influence all the time, is so only during each alternate 4 hours; and the other 4 hours brings him under much more than his proper dose;—perhaps upsetting all your calculations as to the action you desire to obtain.

I know that the secret of the successful use of Quinine in fevers and inflammations depends entirely on a knowledge of its action in different doses, and the length of time allowed for it to get out of the gastro-intestinal tract into the circulation, and out of the circulation into the excretions. I

have often seen a fever in a puerpera, arising, say, from traumatism and subsequent inflammation, as after restoring a perineum by the immediate operation,—I have often seen such a fever go on indefinitely under the daily exhibition of 'Quinine; reduced to a certain point but no further, and wearing out the patience of patient, nurse and doctor,—when, in consultation, I have said, "*stop your Quinine*," and as a result, no more fever from that very hour. I have seen this, I repeat, to occur too often to believe it to be a case of "*post hoc*," and am convinced as to its being one of "*propter hoc*," in every instance where the history is such as I describe. This is no new idea, for the fever-producing action of Quinine has been argued and fought over *pro* and *con*. ever since a German mystic made it the Newton's apple of an old theory, which he persuaded himself that he discovered. But how many of our Quinine-prescribers know of this dispute?—or, if knowing of it in a dim sort of way, ever think of the possibility that the Quinine which they are giving to reduce a fever may, possibly, be keeping that fever up, or even increasing it, in the particular manner in which it is being used? Of old, Pereira wrote, as follows :

"In doses of *ten* grains sulphate of quinia has produced on man three classes of effects: \* \* \* 2. Excitement of the vascular system, manifested by increased fulness of pulse and augmented respiration. Furred tongue and other symptoms of a febrile state are observed."—(*Pereira's Materia Medica*.)

A high French authority, M. Guersant, in the *Dictionnaire de Médecine*, tome XXVI, pp. 565-70, says :

"In a small number of cases the sulphate of quinine, without causing all the symptoms, excites a veritable febrile movement, more or less continuous, even when the digestive organs are in the best possible condition."

A later one, well known to you all, the late Professor Palmer, of the University of Michigan, an American authority on the Practice of Medicine, said last year, speaking of the conjoined use of quinine and morphine in internal inflammations, as follows :

"The quinine should then be suspended. Its continuance in large doses longer than 24 or 36 hours is not only unnecessary, but may be injurious. The brain may be seriously disturbed by its protracted action in these larger doses."—(*Inflammation of the Internal Organs. Trans. Mich. State Med. Soc., 1886.*)

If the brain, why not that portion thereof which presides



over the body-temperature, the so-called *heat-centre*, which, being disturbed or irritated, might keep up the febrile movement?

Without entering even upon any discussion of the fever-producing power of quinine as a clinical fact, I trust that I have shown you that this drug is held, by high authority in our profession, to be capable of doing very serious harm in doses which are commonly employed. Yet, where are we to find anything as to the exact dosage of this much employed agent in different diseases; as to the precise time required for its absorption, its continuance in the body, and its elimination; as to the effect of its repetition before the completion of the elimination of the previous dose; regarding the quantity eliminated in health and in disease compared with that taken in; in fact, the thousand and one matters which would enable this commonest of all remedies to be employed with some degree of certainty as to the effects to be obtained thereby? Echo answers—*Where?* There is really less accurate information available to-day about quinine than about a host of Newer Remedies. And yet, think of the universality of its employment. How many people there are who, on the slightest symptom of a cold, or any indisposition, take ten grains of quinine before going to bed; the very quantity which, Pereira says, will induce the “symptoms of a febrile state?” Kept in bar-rooms, to be mixed with the morning dram of those who fancy themselves subjects of malaria,—given in physician’s prescriptions to an extent which would scarcely be believed, if the statistics were available,—carried by travelers,—kept on the family medicine-shelf alongside the prized patent purgative, or the deadly soothing-syrup,—how little exact knowledge do we possess about it! Here is one of the *opprobria* of therapeutics! If the investigators had busied themselves less about discovering a substitute for quinine, and more about the properties of quinine itself, how much better off would not therapeutics be to-day? And, how can we be content with the advance of knowledge concerning the latest products of the chemist’s ingenuity, when so old, and so powerful, and so commonly-used a drug is neglected? Measuring the advance in medicine by that in therapeutics,—and the latter by the progress in exact knowledge of its commonest tools—mercury, opium and quinine,—how little would be the sum of the progress in all!

Yet, the fact remains patent to every careful observer, that only by accurate dosage, both in quantity and in time of repetition, can we most certainly overcome many of the dangers which threaten us from all agents of great power; among which, however, we are of necessity driven for our most valuable therapeutical weapons. *Magis venenum, magis remedium*, is as true to-day as of old,—but only by our exact and certain knowledge of its action under every circumstance of time, place, disease and dose, that we can keep the *venenum* bridled, and acting, obedient to our will, as a *remedium*.

**Salicylic Acid**, or *Ortho-oxy-benzoic Acid*,  $\text{H C}_7\text{H}_5\text{O}_3$ , already referred to as one of the three isomeric bodies resulting from replacing two of the H atoms in the benzene-ring by the radicals Hydroxyl and Carboxyl, is a prominent member of the aromatic series of carbon compounds, and may be obtained from several natural sources, (the willow, oil of gaultheria, oil of cloves, etc.), or made synthetically by several processes, the most common one being that of Kolbe, viz.: treating sodium carbolate with carbon dioxide gas. Its employment as an antipyretic has been a common matter of therapeutics for several years past (since 1876), also its almost specific power over acute rheumatism, and its antiseptic quality, all of which, except the latter, are also possessed by its salts, the salicylates, that of sodium being most generally used. Curiously enough, it presents some remarkable evidence in corroboration of the views just detailed as to the fever-producing powers of antipyretic agents. Observations reported by Lürmann,\* Baruch,† and others, from 1876 to 1883, gave hints of the occurrence of distinct febrile attacks after moderate doses of this acid and its salts; but in 1884, Professor Erb published a report‡ of a case in which the administration of eight-grain doses of salicylic acid every hour or two, invariably gave rise, after a few doses, to a considerable rise of temperature ( $100^{\circ}\text{F.}$  to  $105^{\circ}\text{F.}$ ), accompanied by an intense redness of the skin, resembling scarlatina. This was repeated several times, and on one occasion the same phenomena followed the administration of 15 grains of sodium salicylate.§ In any other science except ours, a report from so eminent an authority as Professor Erb,

\**Berlin Klin. Wochens.*, 1876. †*Ibid.*, 1883.

‡*Ibid.*, 1884, 29.

§ See Yearbook of Treatment, 1884, Lea Bros. & Co., Phila., p. 307.

which so completely antagonized all the accepted doctrines concerning the action of a whole class of substances, would have excited the most earnest and active attention in every country, and investigations and experiments would, in a year or two, have definitely settled the matter as far as it was capable of being settled. What did the experimental and clinical therapeutists do in this case? Take up the different editions of the various text-books of *Materia Medica* issued since then and will you find anything definite on this subject? Not a word!—except the simple statement by Ringer† that “the repetition of large doses may produce slight fever, \* \* an effect probably due to irritation of the stomach.” This is repeated by Bartholow,‡ who says that “in the carefully conducted experiments of Ringer and Morshead, made on normal subjects, considerable doses of the acid increased the pulse-rate from 10 to 20 beats, but more or less feverishness was produced by the irritant action on the gastro-intestinal mucous membrane.” This is all there is to be found on a subject which has no superior in therapeutical importance, considered practically or theoretically. Why then this neglect? It is due to nothing except professional cowardice; fear of the stigma conveyed by the sneer—“homœopathy!”—from men who are equally ignorant of both homœopathy and their own pathology. And yet, such men as stand at the head of our therapeutists to-day ought to be able to ignore such sneers, should be above being hurt by them. In England they are braver, as witness the writings for ten years past of Professor Ringer, who does not scruple to quote homœopathists\* in his book; and the recent utterances of Dr. Brunton, in the preface to the third edition of his work on Pharmacology. In the latter the author takes up an absurd charge, made by the English homœopaths, that he stole his index from a homœopathic book,§ written and published by the author of this paper, some eight years ago. Dr. Brunton states, what he wrote to me two and a half years ago, that he gave my book, with several others, to an amanuensis, from which to compile a Therapeutic Index

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† *Handbook of Therapeutics*, 11th ed., p. 585.

‡ *Mat. Med.*, 8th ed., p. 383.

\* For example, Dr. Richard Hughes, under Phosphorus, 11th ed., page 307.

‡ *An Index of Comparative Therapeutics*, by Samuel O. L. Potter, M. D., Chicago, 1880.

for his treatise ; but that the amanuensis, being lazy, and finding in my book the work of indexing done, all ready to his hand, simply copied what he wanted of it, and turned it in as a compiled index, the author being entirely ignorant of the man's criminal laziness.\* In the succeeding paragraphs Dr. Brunton proceeds to handle homœopathy in the most rational manner ever employed by its opponents,—with perfect calmness and equal justice, clearly showing what it is, as well as what it is not, in a most masterly method ; and at the same time plainly pointing out, between the lines, that no sneer from either side of the question will prevent his examination of any drug action, or his stating what he believes concerning it. I go into this with the above detail for the reason that this preface is not available to American readers, unless they send to England for the third edition of Dr. Brunton's book ; some dispute between the publishers in the two countries having prevented the importation of the latest edition. In both countries, however, more courage is a *sine qua non*, for if we are to have any real advance in therapeutics our leaders must not be afraid to examine the facts regarding any therapeutical doctrine, belief, or observation, nor to publish the results of such examination when made. As I have already pointed out, the physiological study of drugs, on the lines laid down by the father of modern physiology, has suffered and been retarded

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\* *En passant*, I may say that the defence of my own book was, at Dr. Brunton's request, sent by me to him just a year ago, and was only recently published in the *Lancet* of Jan. 28th last, under the title, "Dr. Potter, of San Francisco, and Homœopathy." In that article I simply denied the two false statements, made in the *Monthly Homœopathic Review* (London) of June 1, 1887, viz.: (1) That I was a practitioner of homœopathy, and (2) that my *Index of Comparative Therapeutics* was a homœopathic book,—showing by a quotation from the slip which I had used for several years past to advertise it, that, among its objects, one is to "vindicate regular medicine from the stigma of 'pathy,'" and another, to "compare regular medicine and homœopathy side by side, showing that modern homœopaths are only so in name." The book consists of excerpts from authors of both schools, arranged in vertical columns, and cannot be called a book of either side. The only original articles in it are those on "Homœopathy" and on "Homœopathic Dose-List," the tone of which are anything but homœopathic. My personal vindication appeared in the *College and Clinical Record* (Philadelphia), of May 15, 1882, page 108, from the pen of Dr. R. J. Dunglison, its editor, to which I would refer anyone who is at all interested therein.

for a century, by this professional cowardice on one side, and professional ignorance on the other side ; through which men, who knew what homœopathy is and is not, were deterred from a legitimate and sadly-needed study by their fear of the prejudices of other men, who knew nothing whatever of homœopathy, and but little of anything else. Progress cannot come until we shake off these fetters.

**Salol**, or *Salicylate of Phenol*, a combination of Salicylic Acid 60 parts, and Carbolic Acid 40 parts, is a recent and very promising addition to practical therapeutics. It is insoluble in water, or nearly so, and hence has little or no taste, and but very little odor. It is given in compressed tablets, which are supposed to be insoluble in the stomach, and only capable of absorption after having been acted upon by the pancreatic secretion in the small intestine. Consequently it cannot cause the gastric distress so commonly set up by its individual constituents. It is believed to be non-toxic, and also a very energetic antiseptic and germicide, and a powerful antipyretic ; in the latter respect being only rivalled by Antipyrine. It is also a diaphoretic, a cerebral sedative, and an analgesic. It is apparently decomposed in the blood, and passes out by the kidneys, the urine having the dark color characteristic of carbolic acid therein.

The therapeutical employment of Salol has been brilliantly successful in *acute rheumatism*, in which affection it bids fair to oust Salicylic Acid, being already looked upon as almost specific in its power to reduce temperature and swelling of the joints, to relieve pain and to shorten the course of the disease. As an internal antiseptic it has proved extremely efficient in gastro-intestinal catarrh and catarrhal jaundice, the so-called "*bilious state of the system*," and bilious sick-headache. The dose ranges from gr. v-xv in these latter affections, to gr. xv-xxx in rheumatism, every three or four hours.

In **Iodol**, another compound which is assuming considerable therapeutic importance, both the inorganic and the organic worlds of chemistry are represented ; the drug consisting of *Iodine*, 85 or 90 per cent., with 10 or 15 per cent. of *Pyrol*, one of the three original volatile principles extracted by Runge in 1837 from coal tar,—the others being *Kyanol*(anilin) and *Leu-col* (chinolin). It occurs as a grayish-yellow powder, odorless, insoluble in water and consequently tasteless, but soluble in

ether, chloroform, etc., and best administered in compressed tablets, and in doses of gr. j to v, every three or four hours.

Iodol is said to have the same action as Iodoform, but to be entirely free from toxic activity, and consequently to be an extremely valuable antiseptic for internal use, also an antipyretic and deodorant. It is rapidly diffused through the system, iodine appearing in the saliva and in the urine in a very short time after iodol has been applied to the surface of a wound. Passing by its employment in surgical affections, in which it has been used with the same results as Iodoform, we find that it fully replaces the latter drug as an internal germicide and antiseptic, in the various affections in which that agent has been so well used, especially chronic gastritis, gastric ulcer, bronchial catarrh, the respiratory neuroses, etc. But still more important are the reports regarding its administration in *diabetes mellitus* and in *tuberculosis*. In the former disease its success has been astonishing, some of the most respectable authorities holding that it effectually inhibits the progress of the affection, even without restriction of the patient's diet. In the tubercular disease the claims made for it are equally strong, many observers holding that either Iodol or Iodoform will inhibit the development of the bacillus tuberculosis, a microbe which resists other germicides of much greater power than these, which must, therefore, have some specific action upon that organism. This subject will be reverted to again presently in discussing the treatment of phthisis tuberculosis, which forms the next sub-division of this report.

### *Therapeutics of Individual Diseases*

In the management of individual diseases the past year has not been productive of any very sensational measures, nor indeed of any very marked improvement, when compared with its immediate predecessors; but it has shown the earnest but cautious zeal which has characterized the work in this department of medicine for several years past. When you last met in this hall the attention of the medical world was directed to the treatment of—

**Phthisis Pulmonalis**, in connection with which the Bergeon method was exciting much anxious consideration on the part of patients, doctors and gas-bag manufacturers;—the latter, as results have shown, realizing the chief benefit from it. A year

ago this measure was yet *sub judice*, though the reports, which were coming in from every direction, were very warmly in favor of it,—so many observers claiming such good results from it that its permanent incorporation into the therapeutics of phthisis seemed to be assured. But, as the months rolled along, the journals presented many conflicting experiences, the tone of the favorable reports growing gradually cooler and cooler, and by the end of the year 1887 it seemed to have dropped entirely out of the current professional literature. The latest authoritative expression on this measure in Europe is contained in a report\* by Dr. Pavai-Vajna, upon an extended series of observations, made by himself in the Pressburg General Hospital. His conclusions coincide with those of the large majority of observers who have given the method a trial of several months before summing up results in a published report, and are in the main about as follows :

The treatment by the method of rectal injections of gas has no important advantage over that by Creasote and suitable hygienic surroundings. It does good service in so far that it moderates cough, lessens the pyrexia and sweats, increases the appetite, stimulates digestion, and promotes assimilation, thereby decidedly aiding the constructive metamorphosis of the tissues. It has no action, however, on the bacillus ; has but very little influence over the local process, and does not prevent the extension thereof, having no power to check the infiltration of the pulmonary parenchyma. As the method is quite troublesome, extremely distasteful to some subjects, and requires special apparatus which needs careful manipulation, it will, in all probability, soon take its departure from private practice, and be confined to hospital and sanitarium routine, especially the latter, where any method involving showy apparatus is always welcome.

In the treatment of Phthisis, according to the most successful methods, *Creasote* and *Iodoform* take high rank. *Creasote* is highly advocated by Fräntzel and Sommerbrodt, the former considering it an agent which, in a majority of cases, exercises a favorable influence over the disease ; but the latter regards it almost specific to tuberculosis in any form. It is administered in capsules, each containing about  $\frac{3}{4}$  grain of *Creasote* and 3 grains of *Balsam of Tolu*, of which one per diem is given at

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\**Central-blatt für die gesammte Therapie*, Dec. 1887.

first, rapidly increasing the dose to three per diem, one after each meal, which is kept up for a week. Each succeeding week sees the daily dose increased by one capsule up to six, at which point the dosage remains for two months. Then nine are given daily for three months at least, and a year if they agree well and good results are shown. The drug is also used by hypodermic injection, by inhalation, parenchymatous injection, etc.; but the method detailed, which is that of Sommerbrodt, gives all that any of the others do, and is the most convenient for all parties. It is not recommended where there is a temperature exceeding  $101^{\circ}$ . 5 F., nor in rapidly progressing cases, nor where the fever is continuous. In those cases which were benefited the cough was the first symptom overcome, next the quantity of expectoration was reduced, the appetite improved, and the body weight increased, in some cases to the amount of 20 to 30 pounds during the winter months.

*Iodoform* has been receiving considerable attention during the year as an internal germicide in phthisis tuberculosis on the one hand, while at the same time its antiseptic power was being strenuously denied by several experimenters, who found that outside the body bacteria developed freely in media containing as much as 50 per cent. of Iodoform. The surgical faith in the drug, however, was not shaken by the results of even such positive experiments as these,—but the working practitioners must have had many misgivings in regard to the value of the experimental method, which in this instance seemed to antagonize the evidence of their own senses, repeated as often as they used the drug on a wound or a sore. The result, however, of further experimentation vindicated both the experimental method and the clinical experience, and only injured those who had been premature in rushing into print,—proving once more the truth of the famous adage of a famous poet, that—

“A little learning is a dangerous thing,  
Drink deep or taste not the Pierian spring.”

It was finally proven that the conclusions deduced from experiments with iodoform and bacteria in the chemical laboratory did not hold good therefor when exposed to the physiochemical influences of the living body. Even the simple matter of raising the temperature of the surrounding atmosphere made the apparently inert substance actively germicide, and bacteria, which were growing in full activity upon a



mixture containing iodoform, were entirely destroyed when the temperature was raised to the body-heat, and a purulent fluid was added thereto. Hence the final result of the discussion has been not only to demonstrate the power of the drug as an antiseptic, but to show in a more exact manner than ever before, its power as a germicide also, when used in connection with wounds and suppurating surfaces,—for it appears that when aided by the influence of heat and moisture, the micrococci of pus have the power of decomposing the iodoform, setting *Iodine* free, and thereby inducing their own destruction.\* During the discussion some valuable observations were recorded concerning the conditions under which iodoform-poisoning occurs when applied to wounds, and the manifestations which are observed therefrom;†—but these pertain more especially to the domain of surgery, and I must pass them by with a mere reference. Not so, however, with its employment in phthisis, which demands our more close consideration.

As far back as eight years ago, namely in 1880, several English physicians had employed Iodoform as an internal remedy in phthisis; and during the next year and the following two their experience with it was published in several journals, and made the subject of a report to the British Medical Association in 1884,‡ in which year it was urged as an inhalation by Prof. Rienzi, of Naples,§ in combination with Turpentine,—1 part of iodoform to 25 of essence (or spirit) of turpentine, of which a few drops in a respirator to be worn constantly, the medicament being renewed every 2 hours. This he found to lessen expectoration and relieve cough in a large number of cases, without disturbing in the least the digestion, the bowels, or the urinary excretion. Dr. Ransome administered it in 21 cases of phthisis, in doses of gr.  $1\frac{1}{2}$  thrice daily, combined with 2 grains of Croton-chloral to each dose, to render it less irritating to the stomach. All these reports

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\*Drs. Rovsing (*Fortschritte der Medicin*, 1887).—Friedlander (*ibid.*).—Poten (*ibid.*).—Tilanus (*Munchener med. Wochens.*, 17, 1887).—Ruyter (*Beilage zum Centralblatt für Chirurg.*, 25, 1887).

†Mr. Treves (*Practitioner*, October, 1886).

‡Dr. Dreschfeld (*Br. Med. Jour.*, 1880, 817; 1882, 50).—Prof. Semmola (*Lon. Med. Record*, 1883, June; *Lancet*, 1882, 326).—Dr. Ransome (*Br. Med. Jour.*, Jan. 5, 1884).

§ *Riv. Clin. e Terap.*, Aug. 1884.

were decidedly in favor of its internal use. This same gentleman is found reporting on its injection into the pulmonary tissue and cavities, for gangrene of the lung and phthisis tuberculosis, in 1887† with but slight benefit resulting; and at the Brompton Hospital it was employed by hypodermic injection, with Eucalyptol, once daily for a month, on two subjects, without benefit.§ Its internal use, however, has received very general approbation during the past year in the continental journals, and if such evidence be of any value whatever, its position as a remedy for pulmonary tuberculosis is established.\* This evidence is elaborately set forth by Dr. Smith in a paper read before the International Medical Congress of 1885, in which he has collated the results obtained from its internal use by observers in various countries, and upon all forms of the disease. With remarkable unanimity they agree in stating that under its continuous administration there were observed a steady gain in weight, an increased appetite, and a lowered temperature,—also diminished expectoration and sweating, and great relief of the cough. The bacillus tuberculosis is said to be particularly susceptible to the action of iodoform, and according to some of the observers quoted, the inhibiting action of the drug upon this microbe is most energetically exerted when taken into the organism by inhalation.†

With all the evidence in its favor, however, Iodoform never became generally employed as an internal medicament in private practice. Its diffusive, penetrating and disagreeable odor must chiefly be blamed therefor, and other reasons are not hard to find. There is probably no disease presenting so many obstacles to a systematic course of treatment as this. The decline being slow, hope always high, quacks on every corner, and their "cappers" and "steerers" in almost every family in certain sections of this country, the unfortunate subject of phthisis is carried about from doctor to healer, from the vendor of chest-protectors and liver-pads to the layer-on of

† *Med. Chron.*, 1887, 281.

‡ *Brit. Med. Jour.*, 1887, 432.

\* Dr. Liebreich (*Therap. Monatshefte*, vol. 1);—Dr. Behring (*Deutsche med. Wochen.*, Nov. 20, 1887);—also various contributions in the *Bulletin Gén. de Thérap.*, 1886 and 1887; the *Annuaire de Thérap.*, 1887;—*Revue de Thérap.* 1887;—and the *Centralb. für d. gesamm. Therap.*, 1887.

† Drs. Rummo and Rienzi (*London Medical Record*, 1885.)

hands charged by a battery concealed on both sides of the hump on his back, its wires running down his sleeves. Then, along comes a "professor of Christian science," as the wise men came "from the east," but *taking* gifts instead of "bringing gifts," as in the olden time. Nothing will satisfy some meddlesome ninny, but to have the poor sufferer try the "faith cure" or some other branch of the latest deviltry, whether it be metaphysical healing in America or hypnotism in France. So the patient goes, from one to another, each new effort resulting in a proportionate degree of depression;—until, when the case comes back into the hands of the regular physician, it is past all hope, and treatment becomes a mockery.

Amid such surroundings and influences, the physician who can obtain a fair trial with such an ill-smelling drug as iodoform must be a very magnetic individual indeed. Hence, much now is hoped from *Iodol*, that combination of Iodine and Pyrol, already discussed, which is free from the odor of Iodoform, while possessing, it is claimed, all of its virtues in this disorder. Furthermore, it is much less liable to give rise to toxic symptoms, which have so often followed upon the use of Iodoform on large wounds or sores, and are naturally dreaded during its internal administration. Although containing less Iodine (85 to 90 per cent.) than Iodoform (96 per cent.) Iodol gives it up more readily, and may be employed with perfect safety and equal therapeutic benefit, in all the diseases which are controlled by Iodoform. Such are the claims put forward for these agents by the professional leaders who are using them every day in the large European hospitals. If continued experience sustains these statements for only this one disease, the years 1884-1887 will be a red-letter triade in the future medical calendar of the world. Any agent, proven to possess specific power against such a slaughterer as phthisis is, must take the highest rank in the *Materia Medica* of the future,—higher than Mercury, Opium and Quinine, the ruling triumvirate of the last half century. No disease compares with phthisis pulmonalis in the number of its victims or the area covered by its ravages; and none has so effectually baffled the investigations and researches of science until now. But, in the broad gleam emanating from Germany upon the bacillus tuberculosis, and in the smaller side-lights shining in, here and there, upon bacillus-poisons, we may perhaps be viewing the dawn of a never-ending day arising for humanity in the destruction of its greatest physical enemy.

In **Diphtheria, Croup**, and all diseases which reduce the lumen of the laryngeal passage, and thereby diminish the air-supply to the lungs, a very marked advance has been gained by the introduction of the method of *Intubation of the Larynx* by means of Dr. O'Dwyer's instruments for that operation. Like all other reforms, it is making its way very slowly,—but when the laity become familiar with its advantages, it will receive proper appreciation, for they will demand it at the hands of hundreds of physicians who affect to pooh-pooh it now. It is making its way, however, even on the other side of the ocean, as is very markedly evinced by a recent letter in the *Pall Mall Gazette*, asking why it was that this measure was not employed in the case of the Emperor of Germany?—a question which might probably be answered in the same words as another frequently-put query: “Why don't the English use Ether instead of Chloroform for anæsthesia?” viz.: “Because it's an American invention!” The description of the operation, as given by the English correspondent, is very amusing to any one who has read the technical account thereof, or who has seen O'Dwyer's tubes and the instruments for their insertion and removal. But, inaccurate as such a description would naturally be, coming from one who has no professional knowledge, his account of the really wonderful results, as seen after its performance on a child of three years of age suffering from diphtheria, is interesting as showing how strong an impression the procedure will make on all who view its successful performance. After describing the condition of the patient, its difficult respiration, and its resisting the operator strongly, he says: “But very soon after the intubation I saw the child sleeping peacefully, and breathing through the tube as comfortably as I breathed without it.”

There are many questions yet undecided regarding the details and the after treatment when intubation is practised,—as to short or long tubes, the feeding with tube *in situ*, etc., etc.,—but with time and experience they will all take their places. But, so far as the operation itself is concerned, its fate is no longer uncertain,—it will never be discarded. The results so far, as summed up in a recent article dealing with all features of the subject,\* are practically as good as those of tracheotomy at all ages, and apparently better in very young children. It

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\* Dr. Ingalls, N. Y. Med. Jour., June 11. 1887.

proves a very useful procedure in serious cases of spasmodic croup, and for œdema of the glottis, as well as for the membranous diseases of the larynx; and for the treatment of chronic laryngeal stenosis, will doubtless be of value. In Vienna it has been taken up enthusiastically by Prof. Carl Störk, who has even condescended to invent an improved instrument for placing and removing the tube.\* This insures the successful establishment of the operation, and if every laryngologist will go to work and devise some modification of the original apparatus, it will yet figure as extensively as vaginal speculæ in the illustrated catalogues of the instrument-makers. It is interesting to hear from Europe that O'Dwyer did not invent intubation at all,—but that Prof. Monti, of Vienna, has, for years, been doing the same thing with hard-rubber tubes, which project from the mouth after insertion into the glottis.†

**Diabetes Mellitus** is another of the diseases in the treatment of which special progress has been made during the past year, worthy of notice in any report upon Medicine. Presenting, as it does, many unsolved questions in relation to its pathology and etiology, every observation which may throw any light thereon is welcomed by the student and treasured in his memory. A recent therapeutical observation by Dr. Bruce, of London, is of great value in this connection. Noting the great success of the treatment of a series of cases by Morphine, he made some experiments therewith on selected cases, with the result that when the drug was given *per orem*, so as to reach the liver through the portal circulation, the glycosuria gradually disappeared;—but when used on the same case hypodermically, in as large doses as could be borne, almost no effect on the sugar-elimination was obtained.‡ As, in the case in question, no effect was produced by an exclusively animal diet, he concludes, from the trifold observation, that the glycosuria was not due to a diminished destruction of sugar in the system, but was due to an increased ingress thereof into the blood; and that it did not gain ingress by a simple transportation of sugar from the intestine or portal vein to the general circulation, but was effected entirely in the liver, whether of nervous origin or not.

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\* Weiner Med. Presse, March 20, 1887.

† Medical Record, Oct. 30, 1886.

‡ Practitioner, 1887, 20.

Recent investigations made at Carlsbad decidedly corroborate the statement of Stokvis, that albuminuria is a very common complication of diabetes. Of a series of 2877 examinations of urine made in one of the Carlsbad laboratories, 1187 showed sugar, and 437 of the 1187 had albumen also,† a proportion of 37 per cent. of the diabetics. This has a practical application to those who make examinations of urine in their daily practice, for nothing is more common than for such a complication to be overlooked. In examining for insurance, for admission to benefit societies, etc., an idea has seemed to be quite prevalent, that the occurrence of one of these substances in the urine precluded the existence of the other;—so that if sugar were first tested for and found, there would be no use in testing for albumen; and *vice versa*, there could be no sugar if albumen were present. Of course, no man of any education whatever in medical chemistry or physiology would entertain such an idea, after a little thought; but I have seen several printed instructions to Medical Examiners, which conveyed it by implication if not by direct insinuation.

The therapeutics of diabetes have been enriched by the introduction of *Iodoform* and consequently *Iodol*, as internal remedies for its cure. The evidence for the curative power of Iodoform therein is quite extensive, and its action in reducing the sugar was exerted in several well authenticated cases where no special diet was observed.

Another agent, concerning which very varying clinical reports have been made as to its power over glycosuria is *Glycerin*, which has been recently made the subject of some very elaborate experimental work, in regard to its influence upon the sugar-producing function of the liver. The result, as formulated by the commentator,\* warrant the conclusions: That—(a) Glycerin inhibits the formation of sugar in the liver, and may check certain forms of glycosuria;—(b) that, in this way, it may lead, indirectly, to an accumulation of glycogen in the liver,—and (c) that it acts more efficiently when introduced into the alimentary canal than when administered hypodermically.

Still another remedy for diabetes has been going the rounds

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† *Zeitsch. f. Klin. Med.*, B. xii., H. 1., 379.

\* Mr. W. B. Ransom, in *Jour. of Physiology*, Aug., 1887.

of the medical press during the past year, namely—the *Lithiated Arsenical Water* introduced by Dr. Martineau to the Therapeutical Society of Paris, as derived by him from the late Prof. Rouget, who had used it very successfully for many years. Into a carbonized-water generator, holding 2 pints of carbonic-acid water, is inserted about 3 grains of Lithium Carbonate, and about gr. 1-10th of Sodium Arseniate, and this quantity of medicated water is daily used, at meals or otherwise. Dr. A. Flint, of New York, gave the method a trial in a series of ten cases, and published the results of his observations thereon,\*—from which it would appear that the claims made for it are not well founded. Dr. Flint discards all the so-called specifics for diabetes, and relies mainly upon an anti-diabetic diet efficiently carried out, and from which milk is absolutely excluded, as its influence over the progress of the disease is prompt, powerful, and most injurious. Of medicines, the *Arseniate of Bromine* alone seems to him to be of service, it sometimes seeming to control, to a slight extent, the thirst, polyuria, and glycosuria.

There is very little faith, apparently, among systematic writers, in the curability of diabetes. Cantain says that it is curable, provided treatment be commenced early and kept up steadily for a long period. Berussi says that he never saw a cure, and Seegen, who treated 400 cases, never found one so much improved as to be able to eat carbo-hydrates like other people. Frerichs had experience of 400 cases, and says that cure is rare, though he mentions 12 cures. Andral, in 84 cases, found permanent benefit in very few. Martineau, in the communication mentioned above, claims 67 cures out of 70 cases, but considerable doubt is thrown upon his cases by those who have discussed the matter. If there is any real benefit from the remedies introduced during the past year, it should be soon ascertained in practice, for the disease is by no means uncommon,—cases being found in every community of any size.

**Diphtheria** is a disease about which practitioners ought to have some definite views as to treatment, and some therapeutical experience which would crystallize into a definite plan, upon a comparison of that experience. Yet, every year or so, you will see in some journal or other, a Symposium on

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\* Med. News, July 9, 1887.

its treatment from the practitioners in certain cities or districts, showing the widest possible divergence from each other as to the individual agents used ; and viewing the subject superficially, one might readily suppose that there is no systematic therapeutics for diphtheria. A closer, view, however, will show that at the bottom of every plan of treatment in use, there is one common, never-varying principle, and that is—*antiseptis*. Almost everything ever used with success in this disease is of the antiseptic class. Even the “supporting plan,” as that by Alcohol and the tincture of the Chloride of Iron is called, is really a treatment by antiseptics,—for where will you find a better or more energetic antiseptic than Alcohol? and when we think of the old “Muriated Tincture of Iron” as a Chloride, we can account for the high rank it has always held in septic diseases. So with the Chlorides of Mercury, the Benzoates, Chlorates, Sulphites, etc.—the vapor of Tar and Turpentine, the gargles of Thymol, Potassium Chlorate, etc.—every measure or agent ever employed successfully has belonged to the antiseptic group. As in the past, so it is now and during the year gone by, every new agent brought forward is also an antiseptic. The chief local measures lately advocated are:—*Carbolic Acid*, by injection into the tonsils (Heubner); *Sulphite of Magnesium*, as a gargle (Burnie); *Perchloride of Iron*, a solution of  $\frac{1}{2}$  to 1 per cent. strength, by injection into nose and mouth (Guelpa); *Arsenic*, the liquor arsenicalis on cotton-wool or sponge probang applied to denuded surface every 4 hours, after removal of the membrane (Moloney); *Corrosive Sublimate*, in solution 1-1000 to 1-2000 as per age, of which dr. j by spray, as inhalation, several times a day (Stumpff); *Sodium Benzoate*, in 10 per cent. solution, by irrigation, every half hour (Brondel); *Iodol*, in powder, or in solution with Alcohol and Glycerin (Stembo); *Eucalyptus*, inhalations of spray from boiling infusions (Bonamy). Besides these there are the conjoined local and internal employment of *Turpentine* according to several methods, doses of dr. j of rectified oil of turpentine having been given to children of 8 years internally, thrice daily up to drachms v or vi (Roose)—or minims xv to dr. j thrice daily until the patient was free from fever (Schenker); burning in the room constantly a mixture of Coal Tar 20 parts to Oil of Turpentine 8 (Schenker, Delthill, etc.); Other internal medicaments advocated are:—



*Oxygenated Water*, in the form of a 2 per cent. solution of the Peroxide of Hydrogen [Vogelsang]; *Iron and Carbolic Acid*, in mixture with Glycerin [Irving]; *Sodium Benzoate*, in solution, 4 or 5 parts to 150, a tablespoonful every hour, also gr. 1-6 to 1-8 of *Calcium Sulphide*, at the same time, in powder or syrup, with local irrigation by the Sodium Benzoate solution, 10 per cent. every half hour, night and day in grave cases. This is reported after three years' use in Algiers [Brondel]; *Pilocarpine*, the hydrochlorate in solution with pepsin and hydrochloric acid [Lax]; *Phytolacca Decandra*, in 5 drop doses every 2 hours, with no local application, except saturating the atmosphere of the room constantly with the vapor of Eucalyptus, has proved extremely efficient [Dr. Leslie Phillips]. The latter drug has given excellent results in the experience of many good practitioners, and by some is regularly used after 48 hours of free use of the *Subchloride of Mercury*, 5 grains every 2 hours. The importance of saturating the air of the room with an efficient antiseptic cannot be over-estimated in the treatment of very young children, who cannot receive the thorough local disinfection which older children submit to. More than half the danger of diphtheria to me lies in the fact that young children cannot receive efficient local treatment;—for, if insisted on, the constant struggle wears out the strength of the child, the patience of the nurse, and the judgment of the parents. Then, it must not be forgotten, that we may induce convulsions by forcibly carrying out such methods upon young children. Furthermore, no matter with what degree of positiveness the physician leaves orders, to have sponging or spraying carried out, it will not be done in his absence more than once or twice if the child resists,—for the American child “rules the roost,” and usually has his own way in everything, no matter who is put out by his tyranny. One only need travel a few days in a Pullman sleeper to find this proposition established. Hence, when treating a case of diphtheria in a very young child, it is always well to provide for the thorough antiseptic saturation of the atmosphere of the sick-room, and the oil or leaves of *Eucalyptus* or *Tar and Turpentine*, are common favorites for that purpose. The latter, however, is a very dirty measure for a sick room, and for this reason alone it should not be used unless shown to be of surpassing efficacy; and on the contrary, a

report from France\* condemns it as useless, and even injurious, being found to increase the croup and the paroxysms of dyspnoea. It affords no therapeutic advantage over *Eucalyptus*, which makes probably the most agreeable and cleanly inhalant vapor. The leaves of the blue-gum may be placed in a pitcher or any other vessel, and boiling water poured over them, the apparatus being placed alongside the bed, and renewed every half hour. A light cotton tent or covering placed over the bed to confine the medicated steam, makes the measure more efficient in bad cases. The *Oil of Eucalyptus* may be used in an ordinary bronchitis kettle, dr. j to each pint of water, and the vapor confined around the atmosphere of the bed, if necessary, by the tent. A very good arrangement for the same purpose is the mosquito-net on a hoop, with rope and pulley to raise or lower it from the ceiling. It can be purchased in the furniture stores, ready to put up, and retains the vapor quite well enough, while permitting the patient to see throughout the room.

Diphtheria is a disease which will repay the most thorough work on the part of the physician. Every little device which adds to the patient's comfort, or relieves his difficult respiration, or in any way improves his condition, is hailed with rapture by the parents, especially in those bad cases of laryngeal and nasal implication which produce so much respiratory distress. We should have the whole armamentarium of local treatment at our fingers' ends, as it were, ready for instant employment, for, on the thoroughness with which local antiseptics is used, depends the success in most cases,—never forgetting, however, the heart, which, in this disease, is so liable to fail at any moment.

THE PREVENTION OF DIPHTHERIA has never received much attention, nor have there been any means suggested whereby, during the prevalence of an epidemic thereof, a family might be protected against its attack. A New York physician, Dr. Caillé, has recently advanced some very sensible views on this subject. Believing that prophylaxis was possible, he selected some eight families in his practice, and in each case had the parents carry out a systematic plan of keeping the oral, nasal and pharyngeal mucous membranes of their children in good order, cleansed, disinfected, and free from injury, such as

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\* Cadet de Ganicourt in *L'Union Médicale*.

abrasions on which germs might lodge, and through which they could enter the organism. All carious teeth were filled or extracted, the mouth rinsed thoroughly thrice daily, after each meal, with either a 3 per cent. solution of Potassium Chlorate, a 5 per cent. solution of Liquor Sodæ Chloratæ, or a saturated solution of Borax in water. Some of the solution was always used as a gargle, and some snuffed through the nares. Kissing of other children, or in fact, of anyone outside the family, was strictly forbidden, and enlarged tonsils were removed or reduced. As a result, in over 2 years, during which diphtheria was very prevalent around them, (even within the houses of 3 of the number), not one of the members of the 8 families contracted diphtheria, although 5 persons among them suffered from several attacks of acute pharyngitis and quinzy. This is a matter well worthy of imitation whenever this disease is prevalent.

**In Gastric Pathology** there has been a large amount of new work done; in France upon dilatation of the stomach and toxic dyspepsia,—in Germany upon abnormal gastric secretions, especially the question of the non-secretion of hydrochloric acid by the stomach in cancer of that organ, and the methods of testing therefor. The observation, first made by Van der Welden, that in cancer of the pylorus free hydrochloric acid is not secreted, and is absent from the gastric juice, has been so frequently confirmed by other observers that it may be looked upon as a settled and most important symptom of that disease, in fact a pathognomonic sign thereof, when persistent. Professors Dieulafoy and Jaccoud, of the Paris School of Medicine, have both recently referred to it in the strongest terms,—the former in the opening lecture of the winter course; and the latter in the latest edition of his clinical lectures, in which he lays down the rule that for the sign in question to have absolute diagnostic value, it must be persistent, and not temporary. The difficulty has been to fix upon a practical and trustworthy test for the presence of HCl, which can be used by the physician as a matter of every day practice, instead of by the chemist in his well-appointed laboratory. So far those which have been put forward by one chemist are shown to be untrustworthy by another,—and the question of a reliable test is *sub judice*.

The Curability of GASTRIC CANCER has been agitated again during the past year to a considerable extent, an occurrence

which may be looked for at regular intervals,—whenever any new remedy is found which possesses the two essential requirements for a cancer cure, namely, extreme scarcity in the markets of the world, and utter impotence for any other purpose. After a burial of many years' duration, *Cundurango* is again raising its head, and a German writer\* declares his belief in its power to cure this disease, based on the observation of a series of 120 cases treated thereby, in the Berlin General Hospital, from 1878 to 1886. There are no particular cases of cure reported in his paper, but in 64 cases in which a tumor was palpable, it entirely disappeared in 8 and was greatly diminished in 17. In several there was decided increase of body weight, and in the majority of those treated all the symptoms were greatly ameliorated and life certainly prolonged. In most of them the gastric pain was greatly relieved within 14 days, and entirely removed after a time; the nausea checked and vomiting stopped unless there existed marked pyloric stenosis or dilatation of the stomach. The dosage used was larger than that generally employed, dr. ijss being given daily in decoction;—this quantity of the bark being macerated in oz. vss of water, and flavored with dr. v of the syrup of orange-peel;—and its employment continued indefinitely. No ill results were noted, not even the boils, which are said to be induced by large doses of this remedy; and the patients took it willingly, even some who could not tolerate any other form of internal medication.

EXTERNAL CANCERS, especially scirrhus of the mammæ and epithelioma of the face and lips, have been recently treated with some new vegetable escharotics, and with excellent results, according to authority of higher rank than usually endorses such agents. One of these is the so-called "*Milk of Alveloz*," the juice of a Brazilian plant, which has been employed by Dr. James B. Hunter,† of the Womens' Hospital in New York, in many cases for the past 3 years, and also by Dr. Velloso,‡ of England, with curative results in epithelioma of the face, and with beneficial results in epithelioma of the cervix uteri. A very popular and really efficient escharotic

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\*Dr. L. Riess, in *Contribl. f. d. ges. Ther.; Berl. Klin. Woch.*

† Paper before the Practitioners' Society of N. Y., see *N. Y. Med. Record*, June 11, 1887.

‡ *Brit. Med. Journal*, Jan. 6, 1887.

application, in some parts of the country, for the separation of a cancerous mass, is the leaf of the broad-leaved or horse-sorrel (*Rumex Acetosa*), bruised in a mortar, and applied daily as a poultice, after abrading slightly the diseased surface. This is undoubtedly an efficient and safe escharotic application, and may be used in those cases which will not submit to the knife. The plant should be gathered when the bloom begins to drop, and may be bruised in an iron mortar, the juice expressed, evaporated to a honey-like consistence, and spread on chamois skin, like any ordinary plaster.\*

Some 20 years ago the *Lancet* published an article from Dr. Peter Hood, of London, advocating the administration of *Carbonate of Lime* in the form of calcined oyster-shells, as an internal remedy, for the purpose of arresting the growth of cancerous tumors. This gentleman has recently renewed his former recommendation, in a paper† which shows his appreciation of the liability of making a wrong diagnosis in cases of this kind; and in which he quotes Sir Spencer Wells to the effect that the internal use of lime salts, in the treatment of uterine fibroids and other tumors, would often produce processes of atrophy and calcification therein, resembling the spontaneous degenerative changes sometimes observed in them. Dr. Hood details some remarkable instances of apparent cure of mammary scirrhus by this remedy, perseveringly used; and strongly urges a full trial of what, at worst, can do no harm in this terrible disease,—than which no greater affliction can possibly come upon poor humanity. There is so much quackery in this State, in connection with cancer, and so widespread a belief that the regular physician knows of nothing but the knife in its treatment,—that it would seem desirable if a thorough trial could be given to these agents in every case in which an early operation is refused by the patient. When the probabilities of late operations are fully considered, there seems but little choice between the knife and any internal medication, no matter how unpromising. Why not, therefore,—when we cannot obtain an early operation, and when a late one promises so little,—give the patient the chance of the internal remedy, instead of the lingering and certain death of the other alternative?

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\*Dr. J. Lamb, in the *Journal of the American Medical Association*.

†*Lancet*, May 7, 1887.

Cancer is increasing to an alarming extent in this country. In New York City, for example, the deaths therefrom in 1875 were 400 per million of population; and in 1885 they had increased to 530 per million. Yet, the cancer quacks of that State are not usually located in the metropolitan city, but in some certain rural towns, so that the increase cannot be wholly due to the presence of sufferers at the supposed "cures." According to the U. S. census of 1880, the deaths from cancer annually were  $36\frac{2}{3}$  per 1,000 of all deaths from known causes in the United States. By the liberality of a New York lady the erection of an hospital for cancer-patients was commenced a few months ago in that city, and will be fully endowed, and furnished with a staff comprising some of the most eminent surgeons and physicians in the country. We may hope that, in this institution,—which will not be conducted in the interests of any particular school, creed, or system of therapeutics,—the question of the curability or incurability of cancer will be determined positively;—also the degree of benefit possible to be obtained from the use of any internal medication. Although believing, as firmly as I do anything in pathology or therapeutics, that in either epithelioma, carcinoma, or scirrhus, we have primarily a local disease, which infects the system at some particular stage of its development; and consequently, that the only rational cure for it is early and thorough removal,—I must confess that there is nothing I should like to see better than the experimental testing, in such an hospital, of all the so-called "cancer cures" which are recommended by any respectable authority—for the sake of the influence which such an authoritative investigation might exercise upon some of the unfortunates who suffer, not only from the disease, but from the rapacity and cruelty of the legion of cancer-quacks.

### *Diseases of the Heart*

Diseases of the heart are becoming of greater importance every year, by reason of their increasing prevalence. A generation ago, if one can judge from current journals, it was quite an event for the general practitioner to have a case of valvular disease; and to be thoroughly familiar with the various murmurs and the corresponding valvular lesions, or with the

physical signs of cardiac disease was a professional accomplishment of no ordinary magnitude. Many eastern clinicians have recorded their remembrance of how rarely they found a well-marked case of heart disease in their clinics before the war; and it is well known that it was his experience in military cases during the war which led Da Costa to the recognition of a new disease in medical nomenclature, the *Irritable Heart*, which he introduced into medicine about 1867.

A recent report of the Boston Board of Health states that "deaths from heart disease have increased in number to a startling extent of late years, and no satisfactory reason can be assigned for it except the general one that we live faster than we did a quarter of a century ago. In 1850," I still quote, "the proportion of deaths from heart disease to the total number (of deaths) was 1.42 per cent. In 1855 it had increased to 2 per cent., in 1866 it was over 3 per cent., in 1874 it had jumped to over 4 per cent. It had increased more than another 1 per cent. in five years from that time, and last year (1886) it reached 6.26 per cent. of the total mortality." Counting the population of the United States at 50,000,000, and assuming that the Boston average would fairly apply to the whole country, we obtain the enormous number of 3,130,000 deaths annually from heart disease in the United States alone.

Such figures involuntarily suggest to the minds of both lay and professional persons the query, "What is the cause of such an alarming state of affairs?" No doubt the effect of four years of war, with its attendant horrors, upon the hearts of thousands of men who afterwards became fathers of children and transmitted weak hearts to their offspring, has had much to do with the increase. But there is another and a far more potent reason, viz.: That we live in a fast era, one in which the machinery of organic life wears out at an apparently early age—only *apparently* so—for now-a-days the youth of 20 has practically lived full 40 years, both mentally and physically. If the number of actual heart-beats could be obtained in every case we would doubtless find many a heart which has done its full life work by the time that its possessor has scarcely entered upon his early manhood. Excitement of every kind occupies the lives of our young men and women from the very cradle, and when the weary heart and worn out brain rebel, and the whole system succumbs to the pressure, stimulation is resorted

to and by alcohol, tobacco, caffeine, and other cardiac and nervous stimulants, the wearied organs take on new force again and again, until some day an attack of so-called "nervous prostration" sounds the first alarm and the over-strung machine breaks down for a time. Then, perhaps, the frightened man or woman gives up for a year to *rest*—and comparative restoration follows. If here a halt is permanently called, the restoration may be perfect in course of time, and the individual may live on to a good old age, hale and hearty as in the olden time. Too often, however, the warning is disregarded, the patient plunges afresh into the same vortex of dissipation as before, and an injured heart, from strain or worry or constant stimulation; or a softened brain from repeated and re-repeated congestion of its circulation; or a paralyzed side or extremities from the escape of blood through degenerated arterial walls upon the cerebral centres; all these, and many more, tell the tale of a "short life and a merry one." Not infrequently, though, the "merry" life ends in a suicide's grave, when remorse arrives upon the final scene of a mis-spent life.

It is a very fashionable etiology that which ascribes nearly all valvular lesions to an acute rheumatic endocarditis; but in daily work in the clinics, the dispensaries, hospitals, etc., we find a large proportion of cases presenting valvular lesions which afford no history of rheumatic origin. The modern instrumental methods of physiological investigation,—the manometers, the kymographs, the angiographs and plethysmographs,—the hæmadromometers, hæmatachometers, thoracometers, etc., etc.,—have brought us into a mechanical manner of thinking in regard to physiological processes, especially when those of the heart are under consideration. Hence we naturally prefer the most positive etiology, and when thinking of the causes of heart disease are by far too apt to go back to a very ancient rheumatism instead of a constantly acting though recent nervous factor.

And yet, when we think of the wondrous ramifications of even one pair of nerves, the vagi, and of the correlation of function thereby produced between the heart and almost every other internal organ of the body, it would seem more natural to look to nervous influence for most of the primary factors of cardiac disease. That constant worry, intense grief, and in fact all the depressing emotions, operate to produce impairment of the appetite and lowered nutrition; also that emo-



tions of the opposite character lead to results of the contrary nature; are matters of such common observation as to be axioms in clinical medicine. That they will directly cause not only functional but organic disease of the heart is a postulate which is on the high road to being universally recognized. Sexual excesses, severe and prolonged muscular exertion, as rowing, and other athletic excesses—I cannot call them “exercises”—occupations necessitating severe muscular exertion, any extreme muscular effort requiring the holding of the breath in a forced inspiration (as lifting a very heavy weight), so as to force down the diaphragm, and with it the pericardium, its attachments, etc.; any unusual and supreme mental effort, as often made in mutinies, sieges, shipwrecks, escapes from prison or from capture in war, etc.; the habitual use in excess of cardiac stimulants, as alcohol, tea, coffee, etc.; fevers of high body-temperature, especially rheumatism, measles, scarlet and typhoid fevers; all these are capable of producing functional cardiac derangement, which, long maintained, may result in organic cardiac disease. How this is accomplished is tersely stated by Da Costa, in the following words:

“The irritable heart just described, as indeed other forms of functional heart disorder, *may pass into organic cardiac disease* by the constant over action of the heart. And overaction or strain may also . . . lead to valvular affection, sometimes by preceding hypertrophy, at other times by a slow process of inflammation or disorganization engendered at or near the seat of the valve.”—(*Medical Diagnosis*, 5th ed., p. 368.

The part played by typhoid fever in the production of angio-cardiac disease has only recently received the attention of writers on etiology. Some studies made in France during the past year by MM. Landouzy and Siredey\* seem to have established some very important facts in this connection. According to these observers, the typhoid-fever poison may not only induce acute cardiac changes, resulting in the heart-failure which so often occurs in this disease, but may set up in the walls of both the heart and the arteries a tendency to a chronic, progressive, obliterating endarteritis, which, as years go by, impairs the nutrition of the heart, the arterial walls, and the viscera supplied thereby, gradually bringing about cardiac hypertrophy, aortic dilatation, corded arteries, sclerosis of the liver, kidneys and other viscera, with various functional derangements, as palpitations, angina and abnormal heart-

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\* *Revue de Medicine*, Sept. and Nov., 1887.

sounds. These results may not become apparent for many years after the original disease, but are no less caused thereby; so that a man may have typhoid fever at 20, followed by some cardiac trouble at 30, a nephritis at 35, and a hepatitis or hepatic abscess at 40. The base of these views consists of a series of 15 cases; in most of which the development of the various pathological processes was steadily observed during a number of years, and are reported at great length and in close detail.

While, however, statistics prove the steady increase of heart disease, as compared with the general mortality list, a section of the profession has been urging a somewhat novel view regarding the comparative non-importance of cardiac murmurs as evidences of organic lesions.

At the opening of the British Medical Association meeting, in 1881, Sir Andrew Clark gave an impetus to the discussion of this subject by a paper, in which he took strong ground for a more favorable prognosis generally in cardiac affections, instancing numerous cases which had developed apparently organic murmurs in early life, and afterwards lost them; also many others which lived to the allotted term of human life with hearts which presented all the physical signs of serious organic lesions. It is too much the inclination on the part of physicians to give a gloomy prognosis as soon as they clearly recognize an organic murmur, and there is little doubt but that the impression thereby made upon the patient's mind has a powerfully depressing influence on the heart itself, an organ which, more than any other, is susceptible to the action of the emotions.

This subject has been recently revived in the New York Academy of Medicine, and was thoroughly discussed last winter by Loomis, Smith and other representative physicians of large experience in cardiac disorders,—all of whom thoroughly endorsed the rule, too often forgotten in practice, and seldom impressed on the mind of the student, viz.: that *the presence of a murmur within the heart should never be accepted, per se, as a positive sign of cardiac disease*, for murmurs exist without cardiac disease, and *per contra*, grave cardiac disease may be present and no murmur produced. This would be news to many of our practicing physicians, ay! to many of our recent graduates; for there is nothing which the student carries away from his college course with greater intensity than the remembrance of the murmurs he has heard at the clinics, and the various

regurgitations and stenoses which he was taught to associate with them.

The tendency of teaching has been to exaggerate the importance of these murmurs, by themselves. It is so rarely in medicine (compared with surgery) that we get hold of some really definite, tangible symptoms or phenomena, that when we do meet such a one we naturally are only too happy to get away from the general symptoms common to so many diseases,—the fever, the nausea and vomiting, the headache, the pains in the back and limbs, the numerous evidences of illness, but of no particular illness—when we can get away from these and can take up so positive a matter as a blowing or churning cardiac murmur, heard with greatest intensity at one of the four regular murmur-sites upon the chest-wall, we are very apt to overrate its importance. If, then, we should express our estimate thereof, if not by actual words to the patient, by our manner, or our evasion of a direct answer, we should convey to his mind that we recognize the evidences of heart disease, we have practically signed his death-warrant, or pronounced his doom, in many cases. No matter how you qualify your expressions, or, seeing the effect you have produced, try to explain them away, the more earnestly you do so the worse the result, for the sick man will look upon it all as confirmatory of his own first impression, thinking that you are trying to “break the news” to him, as it were,—or to “let him down gently,”—to use the popular expressions. The effect on the patient is generally most disastrous, and often the direct cause of death.

In every physician's experience, if thought over, there will be found ample proof of this before he has been in practice very many years. Even in the army it is not a very rare occurrence to find a superficial diagnosis the cause of mental worry, and that again the direct cause of serious cardiac disturbance.

One such case was related to me by an Army surgeon of long experience at frontier posts, with their large population of officers, their wives and children, soldiers, laundresses and their numerous progeny, Indians, half-breeds, and all classes of humanity, making these posts, in time of peace, the best school of practice for a young physician that I know of. In the instance referred to, a young lady, who never had experienced any serious illness, was away from her eastern home, visiting a friend, one of the ladies at the military post where my friend was stationed. A certain lady in the regiment was a dabbler in medicine, who read everything in the line of quack advertisements, medical almanacs, marriage guides, etc., which fell across her path. This would-be female doctor, who

bored the surgeons of the post to death with her half-professional conversation, told the young lady in a very solemn voice that constant yawning was a recognized symptom of heart disease. As the girl was just then attending a good many parties, hops, etc., and losing more or less sleep in consequence, she often caught herself yawning during the day-time. Alarmed at the "wise woman's" statement, she consulted the post surgeon, and had him examine her heart, which he did, telling her that she had an endocardial murmur, but that it didn't amount to anything, and would soon leave her if she took more care of herself. Back to her medical friend went the light-hearted girl, with the report of the surgeon. "An endocardial murmur," repeated she, "that means some organic affection, my dear! and organic disease is incurable, and Doctor Jones was trying to undo what he first said when he told you it would leave you. Just like him! a regular old granny, who forgot all he ever knew years ago. But I'll get a stethoscope from the hospital steward, and I'll listen to the murmur myself;" which she did, and decided it was an organic murmur, and in her own mind concluded that the girl might die at any moment.

Soon the poor girl began to suffer from the most distressing palpitations, accompanied by paroxysmal pain in the precordia, a considerable degree of dyspnoea, etc.; and as each symptom developed it was hailed with delight by her elder friend, who would go to her books, and with the comforting "I told you so," would hunt up new symptoms of cardiac disorder, which would faithfully appear upon the poor girl a few days after their explanation to her. After some time she went with her friend to a homœopathic physician "down town" in the adjacent city, and he recognized the case as one of pronounced valvular disease, but promised a cure by the potency of cactus, spigelia, or some other vial of milk-sugar pellets, labeled with the name of a drug. The girl was now very ill indeed, all her symptoms became intensified, and the post surgeon himself began to look upon the case as one of organic disease.

At this juncture, the lady whose guest the young lady was, drove into town and consulted another physician (a regular) upon the subject, by whom she was advised to bring the patient down for a thorough examination on a certain day, when the two other physicians, who with himself formed the local Board of Pension Examiners, would be at his office, when all three would try what impression could be made on her by a contrary opinion.

The plan was carried out, and the three physicians gave it as their joint opinion that the murmur was purely functional, and due to anæmia, and that there was no organic disease present. The girl rapidly recovered after this, under tonic medication, and in a few months was quite herself again, even the murmur disappearing under the influence of iron, manganese and strychnine, good food and early hours. An interesting feature of the case was that it continued for years to be referred to by the homœopath, in the belief that his medicine was taken, as an illustration of how an organic murmur could be removed by Spig. 200. He always laid great stress upon the diagnosis, which, he said, could not be gainsaid, as it was made by a regular army surgeon.

Many of the rules laid down for the differentiation between organic and hæmic murmurs are undoubtedly wrong, and have to be gradually distrusted and finally laid aside, as the physician gains the personal experience in these matters which practice alone can give him. Among such is the one so commonly taught in the schools and text-books, that anæmic murmurs are produced only at the aortic orifice and are therefore heard with maximum intensity only at the base of the heart. In anæmia we often find the cardiac force lowered to a very great extent, so that the pulse is extremely feeble. It is easy to imagine how so feeble a ventricle would fail to close the mitral valve, and permit a certain amount of regurgitation at that orifice, which would give a murmur having all the characteristics of a mitral regurgitant murmur, and be heard loudest at the apex. As a matter of fact, however, hæmic murmurs are heard as often at the apex as at the base of the heart (Loomis, etc.); and are also plainly recognized all along over the body of the ventricle, according to one observer of high rank (A. H. Smith) even more clearly than over either orifice.

Another old rule is, that the mitral regurgitant murmur is only transmitted to the axilla and the angle of the scapula when of organic production; so that, as a functional murmur at this orifice would not be so transmitted, there is in this rule an unfailing means of deciding between them in any particular case. This seems absurd upon its face. The transmission of any sound, in any situation, and along any medium, depends entirely upon the relation existing between the intensity of the sound and the conducting power of the medium. A very loud mitral regurgitant murmur, whether functional or organic, would be so transmitted, and especially if the lung tissue behind it were more or less consolidated; a point which is usually ignored in the books, but one of very great practical value, as I have always found in making a physical examination of the chest, in determining as to the existence of consolidation of pulmonary tissue and its degree. There are many cases of pulmonary disease in which there is more or less retraction of the lung from the chest wall (pre-existing atrophy, fibroid lung, etc.), and when percussion is made in such cases we often find most excellent resonance, even hyper-resonance perhaps, where we expected to and should find dulness. But if we listen for the heart sounds high up over the apex of the right lung, or half

way around the right chest, just below the axilla, and there find them coming clear and loud to the ear, we may depend upon that intervening lung tissue being consolidated in a greater or lesser degree, even though percussion should fail to bring out an impaired resonance note over it. But this is a digression !

There are no positive means of differentiating between an organic and a non-organic mitral regurgitant murmur by the aid of the murmur alone. We must take all the symptoms present, subjective and objective, and every physical sign to be had, into consideration, before making the diagnosis of organic heart disease. This is generally agreed upon now. One of the most important aids in the diagnosis is the existence of a change in the size of the heart, which, if present beyond doubt, and associated with a murmur answering the requirements, indicates beyond chance of error the existence of organic disease.

That endocardial murmurs may be produced by interruption of respiration was shown by Potin a few years since ; and it is more than probable that most of the murmurs heard at the base, unaccompanied by any other evidence of cardiac disease, or any signs of anæmia, are of this kind—the so-called *cardiac respiratory murmurs*.

The real value of a true endocardial organic murmur is, that it enables us to locate a lesion at one particular orifice, which lesion, however, is established by other evidence than that of the murmur. All experience, clinical and physiological, agrees that no definite ratio exists between the degree of gravity of a valvular disease and the characteristics of the murmur accompanying it ; for a very loud murmur may be associated with a very small amount of disease, and, on the other hand, very extensive valvular lesions may exist without any accompanying murmur whatever. Moreover, the existence of a persistent endocardial murmur is by no means inconsistent with a long and fairly healthy life, many such cases being on record, and many more now known, who carry such murmurs along through life, denying themselves very few of its pleasures and bound by no irksome rules of living.

Hence, in teaching, more stress should be laid upon the undoubted fact that *Endocardial Murmurs and Chronic Valvular Disease of the Heart are not synonymous terms* ; and, unless we would become direct murderers, whose proud mission it is to

save life,—we should give the most favorable prognosis possible in every case of heart disease where no great interference with the circulation is manifested, and should never declare the existence of organic disease of the heart simply because we have heard an endocardial murmur, however loud and clear that murmur may have been. Finally, in no case of cardiac disease should an unfavorable prognosis be given in the hearing of the patient.

The celebrated Stokes, of Dublin, once heard a prominent physician say to his patient, a distinguished public man, who had an endocardial murmur, "Sir, I hear your death-knell!" Stokes publicly reprov'd his colleague for the indiscrete remark, and surely, if ever a rebuke was called for it was in such a case! No ethical considerations should protect a physician having so little sense as to utter so brutal a sentence.

As an instance of the decreased sense of danger in relation to cardiac diseases, let us look for a moment at the present state of therapeutics in regard to one which has always been considered an incurable and a deadly affection, viz.:

**Angina Pectoris**, that curious disease of the sympathetic nervous system (?), the heart (?), or the vagi (?), which slew Arnold of Rugby at its first attack on him, and also John Hunter, but only after causing him years of suffering,—so long considered incurable, though shown by Brunton to be capable of certain palliation by *Amyl Nitrite*, this terrible affection has been made the subject of some recent observations, which go very far towards proving its absolute curability. Professor Laskevitch\* reports four cases of long standing and daily seizures, in which, after the use of *Cocaine* for a few days, the paroxysms gradually decreased in power and duration and finally disappeared altogether. All these patients were subjects of organic cardiac disease and very frequent and severe paroxysms of angina. In detail their chief phenomena were as follows :

No. 1, æt. 35, had aortic regurgitation, cardiac hypertrophy, dilatation of the ascending aorta, and 8 to 10 paroxysms of angina daily for over two years. The use of  $\frac{1}{2}$  grain doses of Cocaine, thrice daily, for three days, resulted in their disappearance, with no return up to date of report.

No. 2, æt. 63, had mitral regurgitation, dilatation of the aorta, intense arterio-sclerosis, and daily paroxysms of angina for six months past. Gr.  $\frac{1}{3}$  to  $\frac{1}{4}$  of Cocaine, three to five times daily, no angina after two days' treatment.

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\* *Revue de Médecine*, Aug. 10, 1886.

No. 3, æt. 5, marked arterio-sclerosis and severe daily angina, which ceased after two days' use of the Cocaine.

No. 4, æt. 40, aortic regurgitation, dilatation of the aorta, and daily paroxysms of angina for eight months past, which ceased after two days' use of gr.  $\frac{1}{3}$  of Cocaine three to five times daily, and have not returned.

Such positive affirmations of the power of a drug are not often uttered by so eminent an authority as in this instance ; and it is to be most earnestly hoped that Professor Laskevitch's experience therewith may be sustained by that of every other observer who has an opportunity of trying it. Huchard had obtained good results in the treatment of this affection by following up Brunton's excellent induction as to the use of the Nitrites, and giving *Nitrite of Sodium* for a prolonged period ; but no one has ever pretended to obtain any curative action of such promptly effective character, in this disease, as that in these four cases of Laskevitch's. Here is an opportunity for a properly organized profession to submit such an observation to positive experimentation, surrounded by scientific safeguards and in the hands of men recognized by the profession throughout the world. If such means were in existence there would be no question on the subject after a year or so. But, as things are now, there is nothing to prevent this observation falling to the ground in a stony place, where it will bring forth no fruit but will die and be forgotten.

If time and space permitted there are many other matters of deep interest in the therapeutical field, which I would like to notice, such as the investigation by Kobert into the action of *Digitalis* and that of each of its constituent principles—the discovery in *Strophanthus* of a better cardiac tonic than hitherto known—the many applications in every day practice of the wonderful properties of *Cocaine*—the different and yet associated actions of the heart poisons *Caffeine*, *Theine*, and others—the elegant and convenient preparations which the manufacturing druggists are placing in our hands, such as the *Tablet Triturates*, the *Soluble Elastic Capsules*, etc., but the field is too wide and this report already exceeds the limit of a patient hearing.

There is one subject, however, which cannot be omitted from any consideration of medical progress, so absorbing is its interest, and so wide the possibilities of its influence upon every department of medicine. Nor will you be surprised to hear me say that by this I refer to the subject of Bacteriology !



*The Germ Theory of Disease.*

Foremost still, as for several years past, in Pathology, Etiology and Therapeutics stands what was at first called the *Germ Theory of Disease*, but which forms now the foundation of a new branch of science,—we may say, indeed, a new science,—that of *Bacteriology*. On, ever onward, marches still the silent army, but the most numerous and the best equipped in this world of warriors,—that composed of the countless hosts of the bacteria and bacilli, cocci, spirilla and other forms of pathogenetic organisms,—the wondrous array of microbes, which, under the leadership of a few men, greater than generals, is marshaled for the conquest of Pathology, and is conquering the Etiology of one disease after another by broadsides of evidence, which is apparently irresistible. Against such a triumphal progress who is there bold enough to withstand the current, to set a limit to the invasion, and to say, “Thus far shalt thou go, and no farther?” He, indeed, must be a bold man who would dare to-day to stand up in any assembly of medical men, with an insane asylum conveniently near, and antagonize the prevailing doctrine of the microbotic origin of the hitherto named *zymotic* and many other diseases. Physicians are far from being angels—in fact they are pretty much like other men—like churchmen, for instance,—and they are just as intolerant as other men of rebellion against established doctrines—forgetting, as all men do at times, that the established doctrine of to-day was a rebel one a few years ago. And while thumb-screws and limb-racks have never been quite as fashionable among us as among the theologians, perhaps from a sense of such methods being rather unprofessional, still we have our own instruments of torture, and would not hesitate to apply them to the iconoclasts in our ranks, if we had the power. It is so unpleasant to have one’s fixed ideas upset by a ruthless barbarian of a scoffer! Here we were all at sea for decades in regard to the etiology of disease, just settling down in a comfortable, storm-proof harbor, and on the very point of casting our anchors, and taking a good, firm ground-hold, when along comes some restless fellow, shouting out that the bottom is all quicksand, and that we must hunt further for a secure anchorage!

Two very notable instances of such rebellion against the germ theory occurred last year; and yet so firm is the position

of the new doctrine that, so far as I have observed, not a single journal has given the slightest editorial attention to either of the attacks upon it. I refer to the address of *Dr. Mariano Semmola*,\* delivered before the International Medical Congress in September last, and to *Dr. Longstreth's* article,† published a short time previously. The first-named gentleman is a physician and a scientist of high rank in Europe, is Director of the Therapeutical Clinic of the University of Naples, and was the delegate of the Italian Government to the Congress. The last-named is the well-known pathologist to the Jefferson Medical College Hospital and the great Pennsylvania Hospital, and lecturer on Pathology in the first-named school. Both these gentlemen avow themselves unhesitatingly as non-conformists to the doctrine of microbic pathogenesis, Dr. Longstreth entirely, and Dr. Semmola only in respect of its later applications, and the quality of the evidence put forward in support of its claims.

Dr. Semmola refers to some interesting facts in the history of micro-biology, which are not generally remembered by those who look upon Pasteur and Koch as the fathers of the new doctrine. One such is that Pasteur's discovery of the cause of fermentation, announced by him in 1857, was anticipated by Caignard-Latour as early as 1825, in his formal announcement that *if yeast made from beer caused sugar to ferment, it was by reason of "some effect of its generation and of its life."*

Accepting the work of Pasteur on the contagious diseases of silkworms, that of Rayer and Davaine, in 1851, and Pasteur, in 1863, on the bacterial origin of anthrax, and some few others, which he calls "precious discoveries," he rejects all the later bacteria, and laments the whirlwind of microbes which, of late years, has been casting dust into the eyes of students and enveloping all Pathology. He ridicules the recent daughter of bacteriology, the doctrine of the *Phagocytes*, that battle between the invading army of bacteria and the defending militia of Leucocytes, supposed to be always raging in the human organism, and which he looks upon as the resurrection of the battles of the acids, of vital spirits and the archeri, which

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\* *Scientific Medicine and Bacteriology, in their Relations to the Experimental Method.*—*N. Y. Med. Jour.*, Sept. 10, 1887.

† *Against the Germ Theory of Disease.*—*Therapeutic Gazette*, 1887, page 816.

formed the medical pathology of Sylvius and Van Helmont, early in the seventeenth century. He attacks the evidence advanced for the proof of microbe-causation in such diseases as osteo-myelitis, ulcerative endocarditis, etc., and shows that, while claiming to follow the strictest canons of the experimental method, its advocates violate them in every case in which they ignore a single one of the data of experience.

Formulating a definition of true experimental science as "*that which proceeds from the known to the unknown*," he insists that in all the investigations upon which the new science is built, there has always lurked an unknown quantity, an  $x$  instead of an  $a$  or a  $b$  in the data upon which the conclusions are based. Hence, he argues, the bacteriologists offer to us as scientific truths, doctrines which are only deductions of the lowest rank, since they rest upon an unknown factor amid their known ones, an  $x$  among all the  $a, b, c$  elements of the proposition. This  $x$  is the soil upon which the bacteria work, the diseased physio-chemical conditions of the blood or tissues of the animal infected,—a problem which is becoming more and more inaccessible to research, when we approach it as forming a receptive and a non-receptive soil for these organisms in different animals or in differing conditions of the same animal; or as influencing the virulence of the generations of microbes grown upon it, to increase, diminish or even alter their pathogenetic power. Thus we may think of this  $x$  as changing perhaps an innocent bacterium into a most deadly one, as easily as it may (and is acknowledged to) lessen the disease-producing power of its succeeding generations; or change its power of causing one disease into power to cause another disease, allied, perhaps, but differing greatly in fatality. This is the stumbling-block which he believes that the prophets of the new belief still carry around their system, and one that is inseparable therefrom, until we know more than we do concerning these physio-chemical conditions of the blood and tissues.

He points out the difference between the antiseptic prevention of Listerism and the antiseptic cures which the phenic-acid therapeutists are crying up, and holds that bacteriology has exaggerated its presumptions, and that its too hurried march does not merit the name of experimental progress. If the study of the vital conditions of the organism does not keep pace with the cultivation of rods and spheres on jelly, potatoes and broths; if pathology is to be given over to bacteria

and be made only a corollary of bacteriology : if the poisons, of which a few are already known to be formed by the human organism in itself, are to remain undiscovered for the sake of the cocci and streptococci : if we are to ignore the wondrous differences in the human soil which make one who had scarlet fever in his infancy exempt therefrom, and another perfectly healthy man who has never had it therefore *not* exempt : if, by the rabid cultivation of bacteriology, with its *x* accepted as an *a*, you suppress the preciseness of the scientific idea, what is to become of scientific Medicine ? Instead of a steady advance all along the lines of Pathology, one equally with the other, do we not risk, as matters go now, the whole of Pathology for a few micro-organisms : and are we not building up the science of Therapeutics upon pathological hypotheses instead of rigorous experience, and thus wandering still farther away from the definite, scientific solution of the medical problem ?

Dr. Longstreth's article is an able arraignment of Pasteur's methods, evidence and conclusions, in each of his various investigations since his yeast-plant discovery in 1857. He points out the fallacies in every argument, and finally brings forward another unknown quantity, a *y* to match Dr. Semmola's *x*, in the data upon which are founded the chain of reasoning for the proof of the central doctrines of bacteriology. This he very clearly points out in the fact, easily demonstrable, that the so-called "*pure cultures*" are *never pure* at all, though purity is the sole object of their preparation, the only excuse for their existence: that they never give back the one single, solitary object of their cultivation, an isolated, uncontaminated, "*blue-blooded*" microbe family alone, by itself; for there is always, in any inoculation made, some of the culture-medium present as well !

However sterilized originally the culture-material may have been, no one can deny that it is changed by the growth of the microbic organism upon it—an organism whose very life function it is to cause putrefactive change. Just as the yeast-plant in its growth induces the fermentative changes in the sugar which eventuate in alcohol, carbonic acid gas, succinic acid, etc., producing new substances as an intermediate stage of the material on its way back to the atmosphere and soil from which the sugar-plant derived the material for its growth : so the microbe, which certainly produces change resulting in disease, when it gains access to the human body, must, in the course of its reproduction, cause putrefactive (or fermentative, they are the same.)

changes in the culture-fluid, and undoubtedly forms new bodies, some of which have already been shown to be active poisons. So, then, in every inoculation we use two things, instead of a solitary microbe, as they would have us believe, we use the microbe plus the  $\gamma$ , the putrefied, changed culture-fluid, with its chemical poison, and we shall never know from bacteriology, as now carried out, which produces the disease.

The favorite culture-medium used by Koch for the cultivation of the bacillus tuberculosis is a preparation of gelatinized blood-serum, an organic material, sterilized by boiling. Upon this the so-called "pure cultures" are cultivated, that is, live, grow, reproduce their kind, and cause putrefaction, decomposition, or whatever else you may call the change which even the naked eye shows is going on in the culture-medium. Now, when of such a culture an inoculation is made, what is introduced into the blood and tissues of the animal inoculated? Is it the bacillus tuberculosis alone? Certainly not. There is also the changed, decomposed blood-serum, and whether it or the bacillus causes the disease no bacteriologist can tell. It ought to answer just as well, in the production of tubercle, as the lumps of cheese and other foreign matters which Villemin and other observers proved to do so, by irrefragable testimony, in 1865 and following years. Three other organisms were handed around scientific Europe before the appearance of Koch's bacillus, each one vaunted as the true and sole cause of tuberculosis; and there was nothing in the evidence for the latter, except the extreme care observed by Koch in all his work, to endow it with the etiological power of tuberculosis, above the others.

But perhaps the greatest blow which the new theory has ever received, is that which one of its fathers has just dealt it, in the shape of Pasteur's latest claims regarding the virus or cause of hydrophobia. It will be remembered that that illustrious chemist has made three efforts to elucidate the origin of that disease. The first, in 1880-81, was with a microbe taken from the saliva of a child dying of rabies after being bitten by a mad dog. The French Academy applauded, until Koch showed that this microbe's progeny would only produce a mild form of septicæmia. Again, a few years later, another set of conclusions was presented, again applauded, and again abandoned, without disproof, too, it may be said,—but in favor of a new theory,—which virtually abandons the idea of a micro-

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bitic origin for hydrophobia at all ; the new method casting all "pure cultures" to the winds, so far as micro-organisms are concerned, and substituting for them a piece of the *diseased tissue* of the rabid animal's spinal cord.

The truth or falsity of Pasteur's work on hydrophobia does not affect this question at all. The real point wherein it does, is that the microbe is abandoned, after Pasteur had presented some three different individuals of that class as the causative organism. So we get back again to the old ideas. If we have to purposely include diseased tissue in our inoculation material, what becomes of the microbe, except that he only figures as an occasional, perhaps even a constant, visitor?—but our faith in his sole possession of pathogenetic power must depart, and then we will, we must look again, as is in accordance with the testimony of ages, to the *potency of diseased tissue alone* for the communication of disease.

The question of the *purity of the "pure cultures"* may be made very clear by an illustration drawn from the antagonism between the theory and practice of our homœopathic friends in the matter of their "pure cultures" of attenuated micro-drugs. With them the molecules of Mercurius, Carbo, etc., as they are cultivated in the culture medium of Sugar of Milk, generation after generation, potency after potency, acquire *greater* power as the cultivation proceeds, in opposition to the *decreased* power of the disease producing germs brought around by cultivation. But neither bacteriologist or homœopathist ever think of their culture medium, whether it has any potency whatever originally, or derives any from the culture process to which it is subjected. Sometimes this is forced upon the homœopathists, and their Sugar of Milk proved to be more potent than the drug therein contained, as in the following curious historical case :

In 1876 the American Institute of Homœopathy elected Dr. Conrad Wesselhoeft, of Boston, Chairman of its Bureau of Materia Medica, Pharmacy and Provings, and entrusted to him the reproofing of medicinal substances, which had been going on for several years previously by members of that bureau. Dr. Wesselhoeft took up the well-known drug *Carbo Vegetabilis*, in, I think, its thirtieth attenuation, as the subject for the year's work ; and being Professor of Materia Medica at their best school, the Boston University School of Medicine, he organized his class of provers from among the students of that college. They were sixteen in number, eleven males and five females. In order to place this particular proving under strictly scientific safeguards, a thing which he believed had never been done before in drug provings, he only told them that they were proving a remedy, but kept them all in entire ignorance of what remedy it was ; and in order to make the symptom-picture more striking, and to eliminate all accidental phenomena from the record, he

fed them for the first month on powders of Milk-sugar, alone and un-medicated, they thinking that they were taking a medicinal agent. Then, after six weeks observation of the phenomena produced by the supposedly inert menstrum, and the daily recording of the same, he changed their pabulum to the thirtieth attenuation of Carbo, prepared in Milk-sugar, without indicating in any way to the provers that any change had been made. The full list of symptoms recorded by each prover, both before and after the change, consequently both those under Milk-sugar alone and those under Carbo 30, were presented to the Society as the report of the bureau at its next annual meeting,\* and created a sensation when it was found that under the supposedly inert menstrum the sixteen provers recorded an array of 765 symptoms, occupying 31 pages in the published transactions, while under Carbo 30 they only produced 212, and they of no marked distinction as compared with the others. The natural and logical deduction might be put thus : Whereas—

*Milk-sugar + Mental Expectancy produced 48 symptoms to the prover;*

*Carbo 30 + Milk-Sugar and Mental Expectancy 13 symptoms “*

*Ergo*—supposing the mental expectancy to be as potent in the one case as in the other, *Milk-sugar alone is more potent as a physiological agent than Carbo 30 and Milk-sugar together, as 48 is to 13.*

**Resumé of the Question.**—In taking a parting view of this question for another year, let us look all over the field and see the actual position of Bacteriology to-day, and the extent of its claims, first taking a glance backwards so as to get our bearings.

In 1856, Pasteur antagonized the prevailing views regarding fermentation and disease processes, which were those of Liebig. Then, as now, the French chemist antagonized the German chemist, and we have his own words for it that he undertook many of his investigations for the express purpose of proving Liebig to be wrong, “tormented,” as he was, “by the idea that” his adversary’s “reasonings might still find some credit”† Long after Liebig has passed away, the nationality of the question has altered, and to-day the same Pasteur is led, in his investigations upon hydrophobia, to stand upon Liebig’s old doctrine, in opposition, as he must be shortly, to the German bacteriologist; but still the Frenchman antagonizes the German, and *vice versa*.

Both Liebig and Pasteur assumed, what they never yet have proved, namely,—that the processes of infectious disease are identical with those of fermentation and putrefaction.

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\* See Transactions of the American Institute of Homœopathy for 1877; Report of the Bureau of Materia Medica, etc.

† “Louis Pasteur,” by his son-in-law, p. 48.

Liebig held that the cause of all three was a *molecular transformation* or change of form in the matter or tissue, repudiating the agency of vital action, and holding that the virus or contagium, which reproduced the disease, is contained in, or a part of, the diseased tissue. Liebig wrote thus : "*By the contact of the virus of small-pox the blood undergoes an alteration, in consequence of which its elements reproduce the virus.*" Pasteur, on the contrary, and his followers, have been teaching us that the diseased tissues are of themselves innocuous, and incapable of communicating disease ; but that the microbe, by its life-processes, consuming the oxygen of the blood, is alone the worker of the evil. " Yes," he says, "*splenic fever is no doubt produced by bacteria, just as itch is produced by acaries (sic) and trichinosis by trichinæ ;*"\* and his argument, as well as that of the whole school, is : "*I discover the microbe, I cultivate it, I inoculate it, and I reproduce the disease.*"† Not always, M. Pasteur ; even in the case of your grand *coup*, the anthrax inoculations. It has been clearly shown, by the evidence of all the observers, that the phenomena resulting after inoculation with a No. 1 culture of anthrax-bacilli and those after a No. 12 anthrax-culture, in the same species of animal, are essentially different, and do not present the same disease, either clinically or pathologically. In the first case, the symptoms observed and the changes in the organs will be the same as those of the natural anthrax disease, having been inoculated from a frozen specimen brought from Siberia, where anthrax is prevalent. In this inoculation, a portion of diseased tissue being present, we may expect, and do obtain, positive anthrax results, the virus of anthrax being present in its full vigor in the material inserted into the organism. But in the case of culture No. 12, and later, the animal dies just the same, but not in the same way. It remains in perfect health apparently for 48 hours or thereabouts after the inoculation is made ; then very suddenly it crouches down, trembles, has convulsions and panting respiration, which continue until death, which rapidly closes the scene. Are these the symptoms of splenic fever ? By no means ! But what says the post-mortem record in all such cases. Nothing to the eye except minute

\**Op. cit.* p. 192. This book is authoritative, having been written under the direct supervision of Pasteur himself. See the final words of the preface.

† *Trelat. Soc. de Chirurgie de Paris*, 21 Oct., 1885.



ecchymoses in the lungs and other organs, which, under the microscope, turn out to be emboli of anthrax-bacilli, the longest of all the microbe family, and the only kind capable of blocking a capillary blood-vessel. What has occurred? The bacilli and their culture-fluid, only, have been inoculated, the diseased tissue having long since been eliminated in the culture process. The bacilli thrive, growing in hundred-fold greater numbers than in the first case, for they have had more time; some get crosswise in the capillaries and a jam occurs, like that of logs in a stream; the bacilli pile up in great numbers, the capillary bursts; the same occurs in hundreds of places elsewhere throughout the lungs and other organs, the blood is not oxygenated, and the animal dies from  $\text{CO}_2$  poisoning, caused by multiple emboli, the result of mechanical obstruction. Now where is the pathology of splenic fever in this case? No! we must not believe that the animal died of *anthrax* simply because we see the anthrax-bacilli and the dead animal! Yet most men would so believe and have.

The conditions laid down as to the requirements which must be filled in order to prove that a given disease is caused by a special micro-organism, are formulated as follows :\*

- (1). *The determination of the constant presence of a special micro-organism associated with the lesions of the disease.*
- (2). *The isolation of this organism by a series of pure cultures.*
- (3). *The production of the disease by the inoculation of the isolated organism.*

This rigid proof is held to have been *already fulfilled* for : Anthrax, Tuberculosis, Erysipelas, Glanders, Relapsing Fever, and several diseases of the inferior animals.

It is considered as very *nearly fulfilled* for : Cholera, Gonorrhœa, Typhus and Typhoid Fevers, Variola, Ulcerative Endocarditis, Pyæmia, Dengue, Osteo-myelitis, Malignant Œdema, Septicæmia, Actino-mycosis, Leprosy, Syphilis, Pneumonia, Puerperal Fevers, Abscesses and other purulent collections, as Boils, Carbuncles, etc.

It is *claimed* as fulfilled by *individual observers* for : Diphtheria, Scarlet Fever, Measles, Malarial Fevers, Whooping Cough, Hay Fever, Tetanus, Dysentery, Gastritis, Enteritis, and Yellow Fever.

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\* Flint's Practice of Medicine, 6th edition, page 89.

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The organisms believed to be the cause of these diseases are all destroyed by a temperature of  $144^{\circ}$  F. in the absence of their spores, while that of  $212^{\circ}$  F., the temperature of boiling water, maintained for five minutes, destroys the spores of all that have been tested (Sternberg). This latter fact is of the highest practical importance, as it shows that rags, clothing, etc., can be thoroughly disinfected much more easily than was formerly supposed, and that no germs of disease need ever gain entrance to our bodies through our drinking water, if we will only boil it.

In this connection a thought occurs which might lead to some clear results if an investigation on its line were carried out. Many years ago an English physician's report was quoted in Braithwaite's Retrospect, in reference to the immunity of the Chinese from typhoid fever, though, he said that in Pekin there was no system of sewerage, but all excreta was thrown on the ground to find its way into the water-courses by which the city was supplied, to soak into wells, etc. Yet, the report said, contrary to all experience elsewhere, typhoid fever was unknown in Pekin. The inevitable conclusion was that Chinese excreta did not give rise to typhoid fever. But, in thinking over the matter, the idea has arisen in my own mind, and grown very strong, that the real reason is because the Chinese boil all the water they drink. Those who know them best say that they never drink cold water, but always tea, *i. e.*, boiled water. Something there must be to account for their remarkable health under adverse surroundings. The assertion may safely be ventured that there is no other people with whom we are acquainted that could live in so crowded a condition as they do and remain so free from epidemic disease.

The many questions which loom up on the horizon of bacteriology give to the thoughtful physician a wonderful field of research, in which there is abundant room for all who have the time, the qualifications, and the desire to engage. Among those which are gradually rising to importance are the following, which need only to be mentioned to suggest the idea, which soon becomes a conviction, that *we* are but the *dwellers on the threshold*, to whom is only granted a fleeting glimpse at the wonders of the temple within.

**The Doctrine of Phagocytosis** was suggested by Metschnikoff, to account for immunity against disease, and

is strongly corroborated by some recent observations on the course of the erysipelatous inflammation. According to this view the white blood cells (leucocytes) of the organism constitute its standing army of defence against the attacks of the ever invading disease germs. "When the body is invaded by bacilli, bacteria, or micrococci, chemical or other irritants, information of the aggression is telegraphed by means of the vasomotor nerves, and leucocytes rush to the attack ; reinforcements and recruits are quickly formed to increase the standing army, sometimes twenty, thirty, or more times the normal standard. In the conflict, cells die and often are eaten up by their companions ; frequently the slaughter is so great that the tissues become burdened by the dead bodies of soldiers in the form of pus, the activity of the cell being testified by the fact that its protoplasm often contains bacilli, etc., in various stages of destruction. These dead cells, like the corpses of soldiers who fall in battle, later become hurtful to the organism they in their lifetime were anxious to protect from harm, for they serve as breeding grounds wherein the bacteria may germinate, and, like a pestilence and scourge, devastate the individual."\*

**The Ptomaines** present another important question intimately related to bacteriology, but whether to support the doctrines thereof, or to refute them, does not yet seem clear. It is established, however, that decomposing organic matter may produce substances resembling alkaloids and highly poisonous to man and the lower animals. They are not only formed in dead bodies, but also in the intestinal canal of living bodies, from the decomposition of its contents in part. They may be absorbed from the intestines into the blood, and excreted in the urine, having been found in human urine both in health and in disease. They may also be formed by the putrefaction due to bacteria, and therefore indirectly by bacteria themselves ; and a non-pathogenetic bacterium may produce a highly poisonous ptomaine. Those which are not produced through bacterial agency are called *Leucomaines*, they arising from the decomposition of albuminous matters in the normal processes of waste in living animal tissues. Among them are Neurine, Cadaverine, Putrescine, Saprine, Mydaleine, Sepsine, etc., some of which are obtained from human cadavers, others from putrefying yeast, maize, pepsin, brain-tissue, saliva, fish,

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\*J. Bland Sutton, F. R. C. S.

cheese, etc. Many of them have actions almost identical with those of some of the principal alkaloids. In milk, ice-cream and cheese may be formed *Tyro-toxicon*, discovered by Vaughn of Ann Arbor, which causes violent symptoms of highly poisonous character.

Now, if non-pathogenetic microbes can produce such highly poisonous substances, why should not the pathogenetic microbes? From this question it is only a short step to the query whether, after all, the microbes of anthrax, tuberculosis, etc., are not merely the producers of poisonous ptomaines, which in turn give rise to the disease, and which may infect the tissue long after their bacilli have been entirely destroyed.

If harmless micro-organisms may develop poisonous ptomaines, or may themselves develop into disease germs by being fed on a particular soil, and *vice versa*, as there is much evidence to show, why may not the association of certain organisms with certain food give rise to new diseases? Or if ptomaines arise *de novo* in decomposing fecul matter in our intestinal canal, why may not a disease germ (organic or inorganic) arise *de novo* from some combination of emanations from our bodies when subjected to great overcrowding? These are only some of the thoughts which arise to mock at our knowledge, by showing us how ignorant we really are.

It certainly seems as though the pathologists of this era are neglecting, in their anxiety to cultivate new forms of bacteria, the study of the two unknown quantities in the bacteriological data, the  $x$  and the  $y$ , which stand where an  $a$  and a  $b$  only are admissible, namely: the character and qualities of the two soils upon which the bacterium thrives—that on which he was cultivated and that into which he is placed to perform his nefarious work. The mere finding of a new microbe, the cultivating it, labelling it, killing guinea-pigs with it, and exhibiting it to curious crowds on a magic-lantern screen, is not the way to bring out the truth of this grand question; is not the path in which to travel for the advance of Therapeutics, the end and aim of all our studies, whether medical or biological. We are workers for humanity, if we are anything. The reason for our being—our *raison d'être*—is that we are working to save life. But what doth it profit any particular portion of humanity if, through our work, he gain a new breed of bacteria and lose his own life? To us, as physicians, advance in Medicine means advance in every direction that enables us

to save life ; and we should be jealous of all study, all research, all investigation, within our ranks, which does not assist Therapeutics in some way, directly or indirectly. If all of the work in Bacteriology simply resulted in the knowledge that bacteria caused disease,—that corrosive sublimate alone could destroy them,—that the weakest solution which would do so is one of 1 in 20,000,—that this necessitates a dose of  $52\frac{1}{2}$  grains for a man weighing 150 pounds, and would mean surer death than even the microbes,—what would be the benefit to medicine of all the study ? And yet, if bacteriological doctrines be true, this is the picture of the dilemma which faces us ! We must insist upon the simultaneous advance of Therapeutics, alongside every other branch of medical science which may be the professional “fad” for the time being ; and we can do much in this direction by giving our individual encouragement to every worker on the line of Therapeutics, every journal which promotes these views. The *Therapeutic Gazette*, edited by Dr. H. C. Wood, is a notable example of such a journal, and should have the largest circulation among medical publications in this country.

**Conclusion.**—The future of Bacteriology is by no means certain. It has probably come to stay, though not, I believe, in its present form. In any event, it will mark an important epoch in the history of Medicine. If it remains as a permanent branch of medical science, it must be in a greatly modified form, supported by better evidence than it has hitherto advanced for its claims ; with less  $x$  and  $y$  in the data upon which rest its conclusions, and more respect for the parallel lines of pathological research. If it arrogate to itself all of pathology, as the Hahnemaniacs did all of therapeutics, it may make a big noise in the world for a while, but in due time it will surely be relegated to the rear rank, or to whatever position it belongs ; and its cultivation will have exhausted the energies of its most enthusiastic votaries, and thereby delayed the arrival of pathological truth.

We are face to face with the grandest problem of all science,—the problem of life itself,—to the conception of which we have climbed by the ladder of infectious disease. Both are unsolved, both may never be solved—one probably never will—though, like the mystery of the pole, which, enshrined in the impenetrable ice of a frozen zone, is still attacked by great men

in every decade, this life-mystery will ever attract the noblest minds in spite of its essential insolubility. But our duty, the law laid upon the shoulders of each one of us, is to work on, aim high, and help, as far as lies within our power, to aid the final solution; approaching the altar humbly, as befits the priesthood of Nature's ministry, ready to record for all future time what we actually see; not, as so many have done, seeing only what they want to see! So perhaps, we may help to bring back again the day when, as once before, the sons of Men shall walk the earth as Gods, clothed with the attributes of Godhead, all knowledge and all power! Omniscience! and Omnipotence!

### *Medical Literature*

The subject of Medical Literature demands a few words before closing this report. There have been many good books published during the past year, and a few which deserve to be ranked as grand. Foremost among the latter should be placed the book which I shall notice first, as meriting the utmost praise that it can receive. I refer to—

**Brunton on Pharmacodynamics,\* etc.**, of which the third edition appeared last year, the first having been published as recently as 1885. In this report I have already referred to the preface of this edition. No words of praise can do justice to this book. In it will be found information concerning the action of drugs which is nowhere else attainable in English, and in shape to be digested and retained in the mind of the reader. The feature which especially characterizes all of Dr. Brunton's work is its thoroughness, and in this respect his book is well up to the mark. Every man who wants to know what is going on in the line of drug-investigation should have this book, and he will soon prize it above all the others in his library.

**Landois' Physiology†** comes next in rank as a book which, in its line, has no equal, much less a superior.

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\***PHARMACODYNAMICS, THERAPEUTICS AND MATERIA MEDICA**, by T. LAUDER BRUNTON, M. D., F. R. S., 3rd Edition, Macmillan & Co., London and New York, 1887.

†**A TEXT-BOOK OF HUMAN PHYSIOLOGY**, including Histology and Microscopical Anatomy, by Dr. L. Landois, Prof. Univ. of Greifswald. Phila., Blakiston, Son & Co., 1887.

It is eminently a book for reference, but in that respect it is invaluable to the physician, for its information is so arranged as to be instantly available, and one does not have to read several pages before obtaining a fact, as is the case with so many of our padded books. By using several varieties of type, and by the employment of numerous headings, and sub-headings, the matter is analyzed so clearly that the eye does not fail to instantly catch the point sought when turning over the pages. Fully and beautifully illustrated, admirably printed, and accurately indexed, it is a superb specimen of American bookmaking. One of the great advantages of the book is the manner in which the author brings morbid physiology (pathology) alongside of the normal processes,—enabling the student to apply each item of physiology to the knowledge of disease,—and thereby making the book in truth what he designed it to be—a bridge between Physiology and the Practice of Medicine.

**Fagge's Practice\*** is one of the most valuable books which has appeared for many years, and deserves to rank, in its department, with the two books just mentioned. The author was the late Dr. Charles Hilton Fagge, F. R. C. P., a Lecturer and Examiner in Guy's Hospital Medical School and the University of London, well known to the profession in England by his many excellent contributions to the Guy's Hospital Reports for several years past. This book, in two imperial octavo volumes, is one of the most original treatises on the Practice and Principle of Medicine that has ever been published. Every page bears the stamp of the author's own individuality, and affords ample evidence that he was writing of his own experience in disease when he penned its scholarly lines. At the same time it is evident that he sedulously culled from the whole medical world, and drew on the modern literature of several nations for the results of his contemporaries' experience. From German, French and Italian sources has he drawn for material, and the American authors to whom he refers number no less than thirty. As a treatise by a single author it is decidedly the most philosophical of any upon

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\*THE PRINCIPLES AND PRACTICE OF MEDICINE. By the late Charles Hilton Fagge, M. D., F. R. C. P., Physician to and Lecturer on Pathology at Guy's Hospital; Examiner in Medicine in the University of London. Philadelphia: P. Blakiston, Son & Co. 2 vols., published by subscription.

medicine now in the market, and its perusal cannot fail to charm every lover of his profession.

**Strumpell's Practice\*** is a very different book from the one above noticed, and yet it is an unusually good book in its way. It is a Text-book of Medicine in one volume in its American dress, though issued in three volumes in Germany, where it rapidly reached a third edition, from which the American edition was translated. It has been adopted as the text-book in Medicine at Harvard, and is unequalled for its concise yet full and clear treatment of the pathology of internal diseases, especially those of the nervous system. In treatment, the book is particularly strong; and in fact, for a single-volume text-book on Practice, it has no superior.

**Finlayson's Clinical Manual,**† recently issued in its second edition, is a book which deserves notice. In part written by several eminent Scottish teachers, men of great reputation in their special departments, it is perhaps the very best manual of clinical diagnosis for the junior practitioner, who frequently finds some of the other books on diagnosis too heavy, and not sufficiently minute in their treatment of details,—the little things of the diagnostic work. In this respect this manual exactly fills the requirements, and though written by one of the most erudite of Scottish physicians, and Scotchmen are noted for the thoroughness of their education, the phraseology is exceedingly simple, so as to be comprehensible by even the junior student.

**Seifert and Muller on Clinical Diagnosis‡** is the title of a little book of 173 pages, which admirably supplements the larger manuals in several respects, particularly in the minute directions given therein for the diagnostic examination of the blood, sputum, fæces, urine, gastric contents, etc. The

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\* A TEXT-BOOK OF MEDICINE, for Students and Practitioners. By Dr. Adolph Strümpell, formerly Professor and Director of the Medical Polyclinic at the University of Leipzig. Translated by Vickery and Knapp, notes by Shattuck. N. Y. D. Appleton & Co. 1887.

† CLINICAL MANUAL FOR THE STUDY OF MEDICAL CASES. Edited by Jas. Finlayson, M. D., Physician and Lecturer of Clinical Medicine in the Glasgow Western Infirmary. Second Edition. Phila. Lea. 1887.

‡ MANUAL OF CLINICAL DIAGNOSIS, by Dr. Otto Seifert and Dr. Friedrich Müller, of Würzburg and Berlin. Translated by Wm. B. Canfield, M. D. N. Y. Putnam's. 1887.



main text comprises a most excellent, though brief, resumé of the points in physical examination and the data and figures pertaining to the different organs and functions of the body. The chapter on Parasites gives full information regarding the staining of the bacilli usually encountered. Small books should stand beside the large books in every physician's library; and when they are accurate and have been prepared with an understanding of their proper scope and purpose, no books are more serviceable, especially to the man who has work to do, and but little time to do it in. This book is one of the very best of the kind, and will be highly prized by every one who possesses it.

**Fox's Photographs of Skin Diseases\*** is the last book I shall notice. This is a new series, a continuation in part, and partly a review, of the non-syphilitic volume of his former work bearing the same title. The immense value of such books as these to the general practitioner, can only be appreciated by one who, like the writer, was suddenly cast into full practice as post surgeon at a frontier station, in charge of 500 men, women and children, with a large cowboy and Indian population around him, and no other physician for consultation within 150 miles. In such circumstances, photographs like those which Dr. Fox gives us for 28 cents each, colored by hand, explained by a complete text on skin-diseases, and handsomely bound, would be worth their weight in gold ten times over. There are many practicing physicians all over this country, who are situated just as described, and to all such this book is a skin-disease clinic at home. Excepting Hebra's great atlas, which costs something like \$125, there is nothing in this line which approaches this book in practical value to the working practitioner.

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\* PHOTOGRAPHIC ILLUSTRATIONS OF SKIN-DISEASES, by Dr. Geo. Henry Fox. (Second Series.) 48 autotype plates, colored by hand, comprising 90 cases. N. Y. E. B. Treat. 1887.



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